SWORD MASTER

>> Follow our new 'step by step' tutorial to create 'SwordMaster' (this months cover image) from head to armour, 8 months in a row! >>

EVE ONLINE

>>CCP's Kari Gunnarsson talks to us about the online gaming pheonomenon>>

DIGITAL ART MASTERS

>>more exclusive content from this new and amazing digital art overview book>>
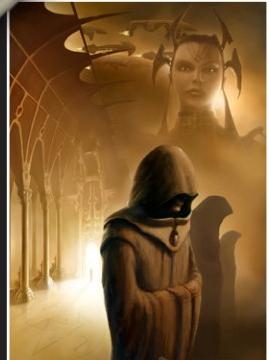
FRED BASTIDE
>> Self taught CG artist and monster obsessed!

JUAN SIQUIER
>> 3d Modeler & Texture Painter

TEXTURING MASTERCLASS
>> Texturing a scene part 2 by Richard Tilbury

PROJECT OVERVIEWS
>> 'Nintendo' by Michael Knap & 'Furniturecluster' by Mathias Koehler

Contents

3dcreative
www.3dcreativemag.com
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cover story
articles
interviews
tutorials
making of's
competition
galleries
reviews
recruitment

Welcome

Once again to another packed 3DCreative. Biggest news this month is the addition of our new 'SwordMaster' Tutorial. Over the next 8 months we will see the creation of the real-time cover character from the beginning to the end. Not only this, we have had it created in 3DSMax, Maya, Cinema 4D, Lightwave and Softimage XSI!

Techniques and Tutorials

Apart from SwordMaster, this months includes the 5th instalment of our 'Texturing Masterclass' series, 'Texturing a Scene' part 2. The series has covered a wide range

of techniques and topics and you can still purchase any back issues if you missed a part! We start 'Alpine A443' an in depth Car modeling tutorial in 3 parts by Dettore Olliver Thomas. Parts 2 will follow in the next issue. Neil Maccormack has written an exclusive tutorial on 'Intergrating 3D objects into 2D environments'. This skill has been fairly overlooked and we thought it time to show you how! The 'Making Of's' section this month features 'Nintendo' by Michael Knap & 'Furniturecluster' by Mathias Koehler. We also have a look at 'Robo' by Juliano Castro, which features in the www.3dtotal.com book 'Digital Art Masters'.

Inspiration

3 Interviews this month alongside some amazing artwork. Fred Bastide, Juan Siquier & Vitaly Bulgarov tell us how they work and give us insight into the methods which have made them world class 3D artists.

Industry

Exclusive! In this Issue, we talk to Kari Gunnarsson from CCP, creators of the giant online game 'Eve'. From concept to online we find out the truth!

About us

Zoo Publishing is a new company comprising of a small team here in the Midlands, UK. This magazine is our first project which we are hoping, with the support of the community, will build into a great resource and a highly anticipated monthly release. The 'support of the community' is an interesting point, where a 'magazine for 3d artists' is not an original idea, the marketing and distribution of this magazine, as far as we know, is a first. It follows the principle of traditional magazines that are sold on news stands and in many outlets, but being a digital downloadable mag the many established web communities on the net are our outlets and newsstands. 3DCreative is supported by 3dexcellence, 3dkingdom, 3dlinks, 3dm, 3dmonkeys, 3dnuts, 3dpalace, 3dresources, 3dtotal, 3dvalley,123d, ambiguous arts, cgchannel, cgdirectory, cgfocus, cgunderground, childplaystudios, daz3d, deathfall, digitaltutors, kurv studio, max-realms, mediaworks, rendezvous3D, spinquad, subdivision, the3dstudio, thebest3d, vocanson & vanishingpoint.

We look forward to lasting and successful partnerships with these CG community sites.

this issues Contributing artists

Every month, many artists from around the world contribute to 3DCreative Magazine. This month, we would like to thank the following for their time, experiences and inspiration.

Fred Bastide

Montreux, Switzerland
I have been practicing sculpture & drawing since childhood. Artistic activities have always been very important for me, and art truly is my way of life. I got a classical artistic education, and I'm a graduate of the Ecole des arts appliqués de Vevey & Ecole supérieure d'arts décoratifs de Genève. However, I'm a self taught cg artist. I principally use computer generated images in addition to traditional art, I like to marry old and new techniques to make artworks.

fredbastide@vtxnet.ch   www.texwelt.net

Mathias Koehler

3D artist > Freelancer > Braunschweig, Germany > I'm dealing with 3D for about 3 and a half years. My focus is modelling, lighting and texturing. Through CG I became interested in art in general and also started drawing. Currently I'm a student of Industrial Design at Braunschweig School of Art. I'm addicted to coffee, books and electronic music.

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Juan Siquier

Born in Albacete / Spain
Before CG world I used to spend my days painting in traditional mediums & showcasing my art in many expositions. since 2000 I have spent more time self learning computer graphics. I have been a web designer in a small local company and freelance graphic designer, I am currently working as a 3d modeler and texture painter on a feature animation called "Dear Anne, the gift of hope" at 263films in Milan, Italy.

info@juansiquier.com   www.juansiquier.com

Michael Knap

3D Artist > 3d-animation. dk, Denmark. I have been working professionally with 3d modelling, texturing and a little animation for the past 1½ year. I started out right afterschool being headhunted for the occupation. Most of the time I make interactive real-time models, but recently I was put on high quality realistic renderings. 3DS MAX is my current weapon of choice. Hope I will be doing more commercials in the future and maybe take part in the character animation part.

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Neil Maccormack

freelance 3d artist > Bearfootfilms> Geneva Switzerland. i was first exposed to 3d at university where a house friend was using a very early version of LW on the amiga and i was just hooked since then. It took me a few years after that to start producing my own 3d images and animation but i soon realized that it was what i wanted to do. I have been working freelance now for the past 2 years after starting my own and very small studio in Geneva switzerland where i live.
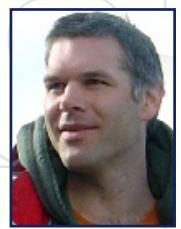
neil@bearfootfilms.com   www.bearfootfilms.com

SwordMaster
tutorial artists

SOFTIMAGE
XSI

Luciano Iurino

I started back in 1994 with 3D Studio on MS-Dos as modeler/texture artist. In 2001 I co-founded PM Studios (an Italian videogame developer) with some friends and I still work for it as Lead 3D Artist. Recently we have developed the videogame "ETROM – The Astral Essence". I also work as freelancer for different magazines, web-portals, gfx and videogame companies. Recently I left the 3dsmax environment to move on XSI.

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Vojislav Milanovic

3D modeler & animator, vfx compositor, Anigraph studio, Banja Luka, Bosnia Self though allround 3D guy, started to doodle around in 3D about 8 years ago. In the last 5 years I have done a lot of various things from print and TV ads to gaming & movie graphics. Currently involved in multimedia study and character developing for an animated feature movie. One of my carrer goals is to work in a large studio and make my own animated movie.

lightwave
CINEMA 4D

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Niki Bartucci

3d modeler > Freelancer Bari, Italy > I started working in the field of Computer Graphics in 2000 as an illustrator & web designer. In 2003 I started using 3d graphic software such as Cinema4D & later 3d Studio Max. That year I worked on ETROM - The Astral Essence, RPG video-game for PC, developed by PMstudios. Currently I'm a freelancer & I specialise in commercials. I Like 3d graphics and video-games, especially RPG & RTS video-games.

niki@pikoandniki.com   www.pikoandniki.com

Taylor Kingston

3D artist > Digital Illusions (DICE) > London Ontario, Canada > Started out with 3D on Studio Max 1. Self taught through high school, going to Sheridan College for tradition art, and Seneca College for Computer Animation where I switched over to Maya. Hoping to one day break into film, perhaps even getting into the directing side one day. Currently working at Digital Illusions as an object artist.

Maya

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Giuseppe Guglielmucci

3d modeler / 3d animator > Freelancer > Bari, Italy > I have began to use computers with the epoch of the vic20 and Cinema4d was my first 3d software. I started working in the field of CG in 1999 in commercial design. In 2003 I worked on ETROM - The Astral Essence, RPG video-game for PC, developed by PMstudios. Currently I'm a freelancer specialising in commercials, hoping to work in the video-games industry and develop my own game.

CINEMA 4D

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Bastide

Fred

A fascination with monsters and an addiction to technology, talented CGI Artist, Fred Bastide, takes time out to talk to us about how he started out in this industry...He enlightens us into his love of Plastiline in the making of his characters, and how he is finding ZBrush a very useful tool...

fred
Bastide

**Hi Fred. Could you tell us how you started out in the world of 3D?**

I discovered CGI during a long period of artist's block, with 3d studio max (dos version). The first two years of studying were not very intensive; it was more of an amusement than anything else. It was only once I had sufficiently assimilated the program and I was able to get rid of the technical constraints, that I was able to leave the field of experimentation and really become creative with it.

Ahh I see, so is your artist background self-taught or did you go to college to study?

I'm a graduate of the 'Ecole des arts appliqués de Vevey', where I learnt about perspective, colour theory and very basic art stuff. After that, I moved to the 'Ecole supérieure d'arts décoratifs de Genève', but it was a pure waste of time. I was spending my time painting white or black monochromes and all that kind of boring conceptual things. I was very unhappy there.

What about work. Are you a freelance artist or do you work full time?

I'm currently work in a completely unrelated sector to CGI, but I work only part-time. However, I realise some illustrations with computer-generated images, as a freelance artist in my spare time.

interview
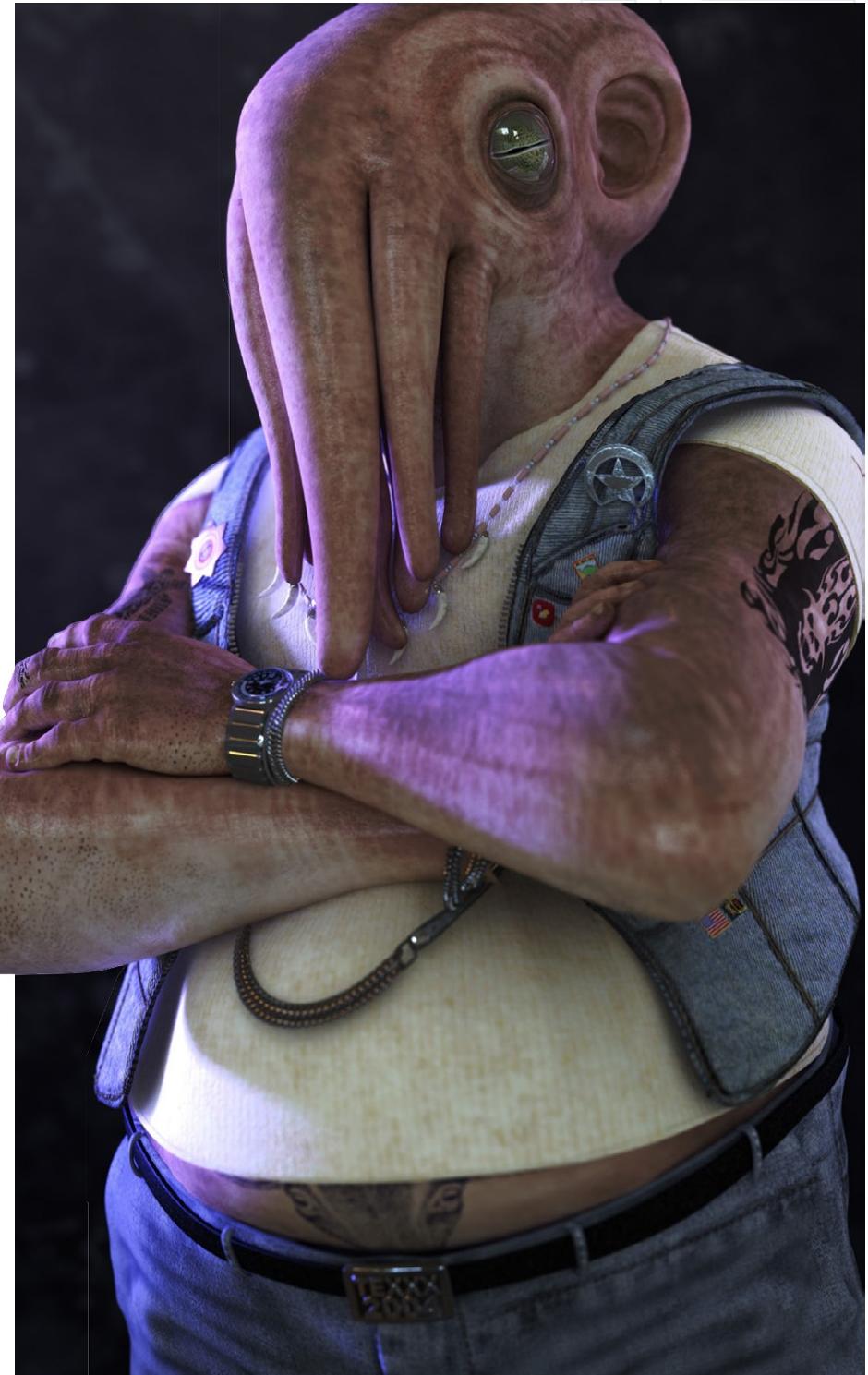
I have noticed that you have used plaster sculptures in the creations of some of your characters, how do you feel this technique benefits the overall outcome of your work?

It's not plaster, but plastiline. A material made of grease, clay powder and wax which is very similar to kids' modelling paste. I like to conceptualize a model with this kind of material, because it's very efficient in obtaining a good basic shape quickly. However, recently, I've discovered that ZBrush offers the same type of approach, so I've made my last models without plastiline roughs, so I will certainly give up with this stage in the future.

So you have tried both approaches to creating your characters, but which one gives you a greater sense of achievement?
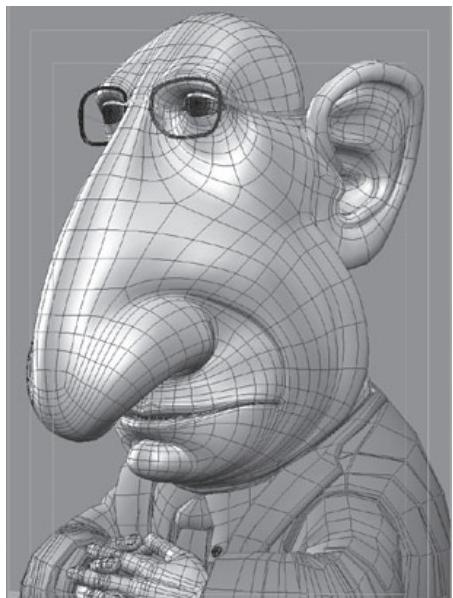
There is no method better than the other. The ZBrush method saves a lot of time, and could become fantastic with a good re-meshing tool. But to create, I think it's better to have real physical contact with materials. So my preference would certainly be to my first love, the plastiline model.
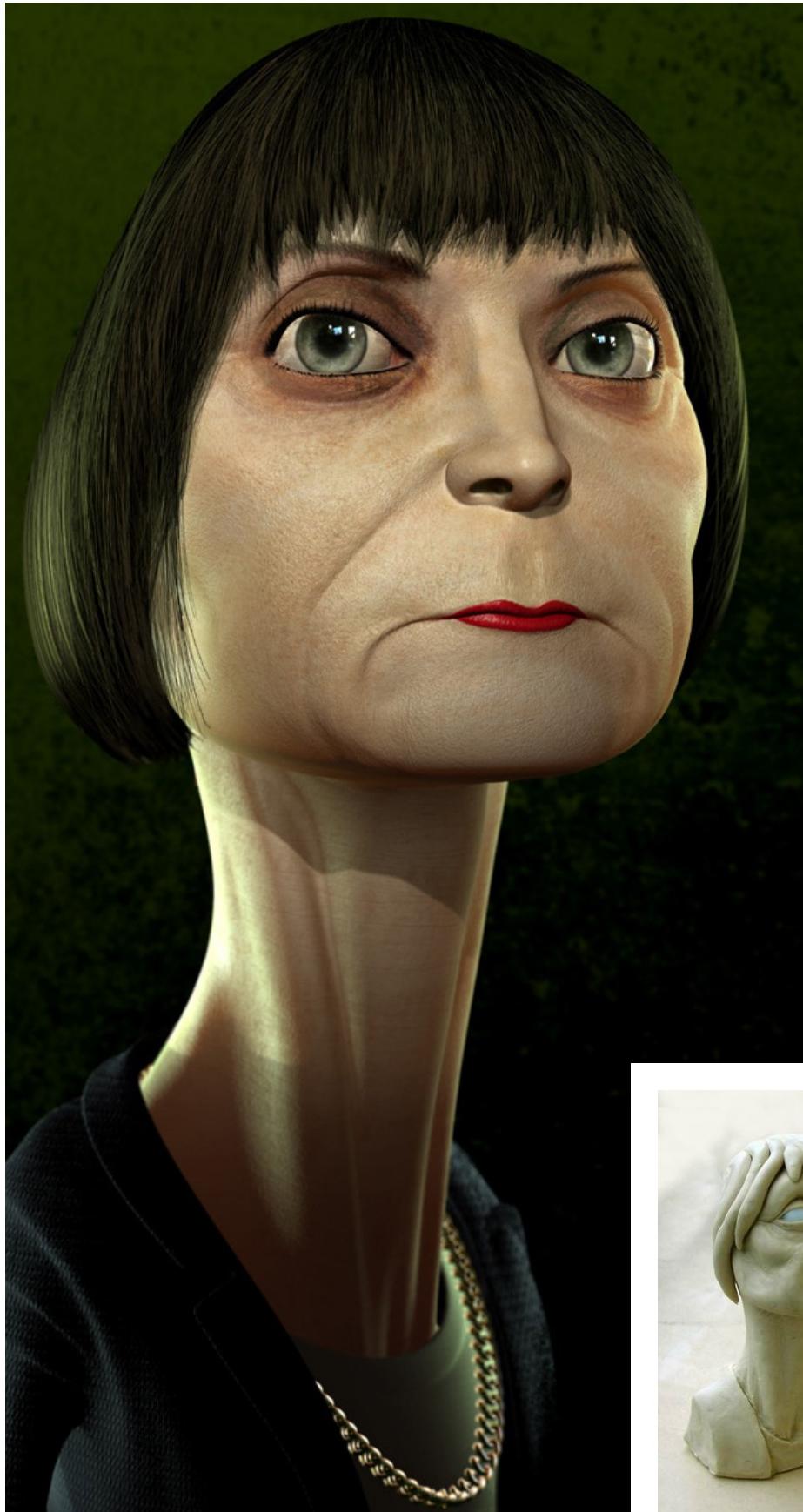
How do you start using these in your character modelling?

It depends. Sometimes, I make face/profile photos, then use them as references inside 3dsmax. Another way is I just keep the sculpture on my desktop, and this helps to better visualize the geometry, and determine edge loops placements.

It's very difficult for me to create a model without solid references, so spending some time on a plastiline model can save a lot of time.

Could you explain to us why you seem to give some of your characters very exaggerated features?

It's the principle of caricature: choosing a determinant characteristic of a person's face and exaggerating at its paroxysm, a principle you could also find in childrens' drawing too. I think my approach is very similar.

Have you ever been tempted to create a likeness of yourself, and if so which part would you exaggerate?

Yes, I will certainly do it once. Due to the fact I don't talk a lot, and I'm constantly observing, I will give my caricature big eyes, and certainly a long neck to manifest my often haughty attitude.

When you're not in front of a computer screen, how do you spend your free time?

I'm a completel technology addict, so when I shut off my computer, I grab my Gameboy or my PSP and play for a while!

Before, I spent a lot of time drawing, but curiously, I lost interest for some years. So now, when I make some sketches, it's only for modelling purposes. I have to confess, that I'm very lazy and I spend a lot of my free time on my sofa, watching TV, or reading comics.

So what's your favourite game?

I couldn't narrow it down to only one! It's certainly between Mario 64, Zelda Ocarina of Time and Resident Evil 4. I really love the last Oddworld too, I think it's a real masterpiece.

Could you tell us one thing about yourself that knowbody else would know?

I was born with a strange and very rare skin malformation. Except for my left hand fingerprints, it completely disappeared years ago, but I'm pretty sure that it could explain my always obsessional interest for monsters.

Well it has been a pleasure talking with you, and I look forward to seeing a new creation from you soon.

Thank you for giving me the opportunity to express myself.

Fred Bastide

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Interviewed By :

Chris Perrins
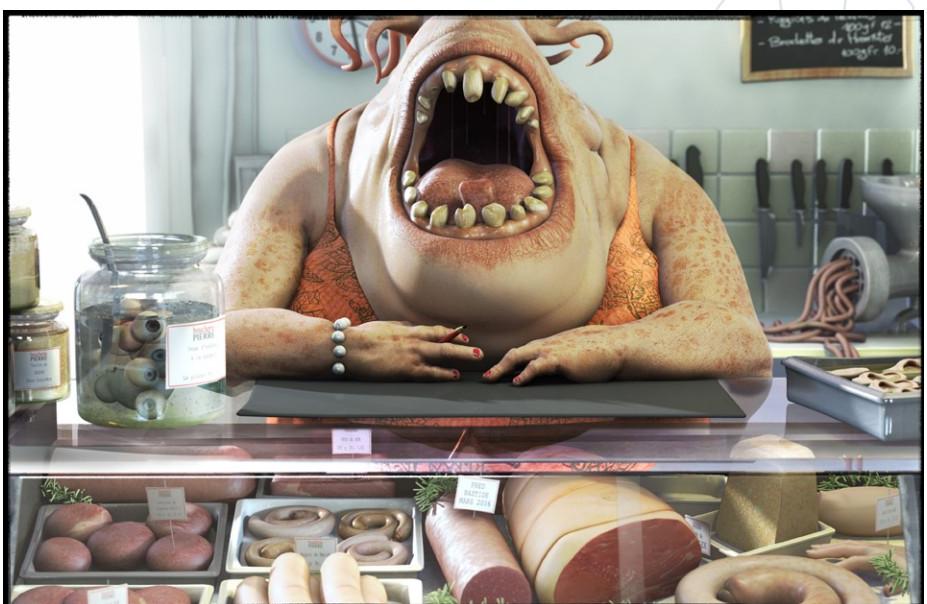
I choose ZBrush because...

"ZBrush's **unique** and **intuitive** tools allow me to **create** complex and **detailed** creature designs that couldn't have been achieved any other way, as swiftly or **precisely**."

Caroline Delen

ZBRUSH

2D & 3D Painting, Modeling & Texturing

ZBrushCentral.com

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JUAN SIQUIER

"Imagine being a young boy - fascinated by dinosaurs & aeroplanes (two very common likings in 8-year-old boys!). When you have a little money, you don't know whether to spend it on a Diplodocus book or a scale model of a Spitfire?! When you grow up, someone offers you a job in which you have to fly an aeroplane to study a group of dinosaurs. It's not an objective relationship between the two things, but you get to enjoy them both at the same time."

JUAN SIQUIER

Hello Juan and thanks for taking the time to be interviewed. You state in your biography that you got involved with CG back in 1994. What is it about this medium that interests you particularly?

I actually started in CG in 1994 thanks to the impact that an Atari st software called CAD3D gave me, which was programmed by Tom Hudson (who later was the creator of 3DStudio with Dan Silva). I didn't touch upon the topic again until 2000 when I came back to CG, being helped by the huge amount of information in this matter that I found on the Internet.

I think that what made an impact on me concerning this medium was that it married two of my biggest passions in a single activity. On one hand the technology and the contact with computers and on the other hand the Art, with powerful tools that allowed me to create any imaginable thing emulating the real and natural creation. By that I mean that if you move a light
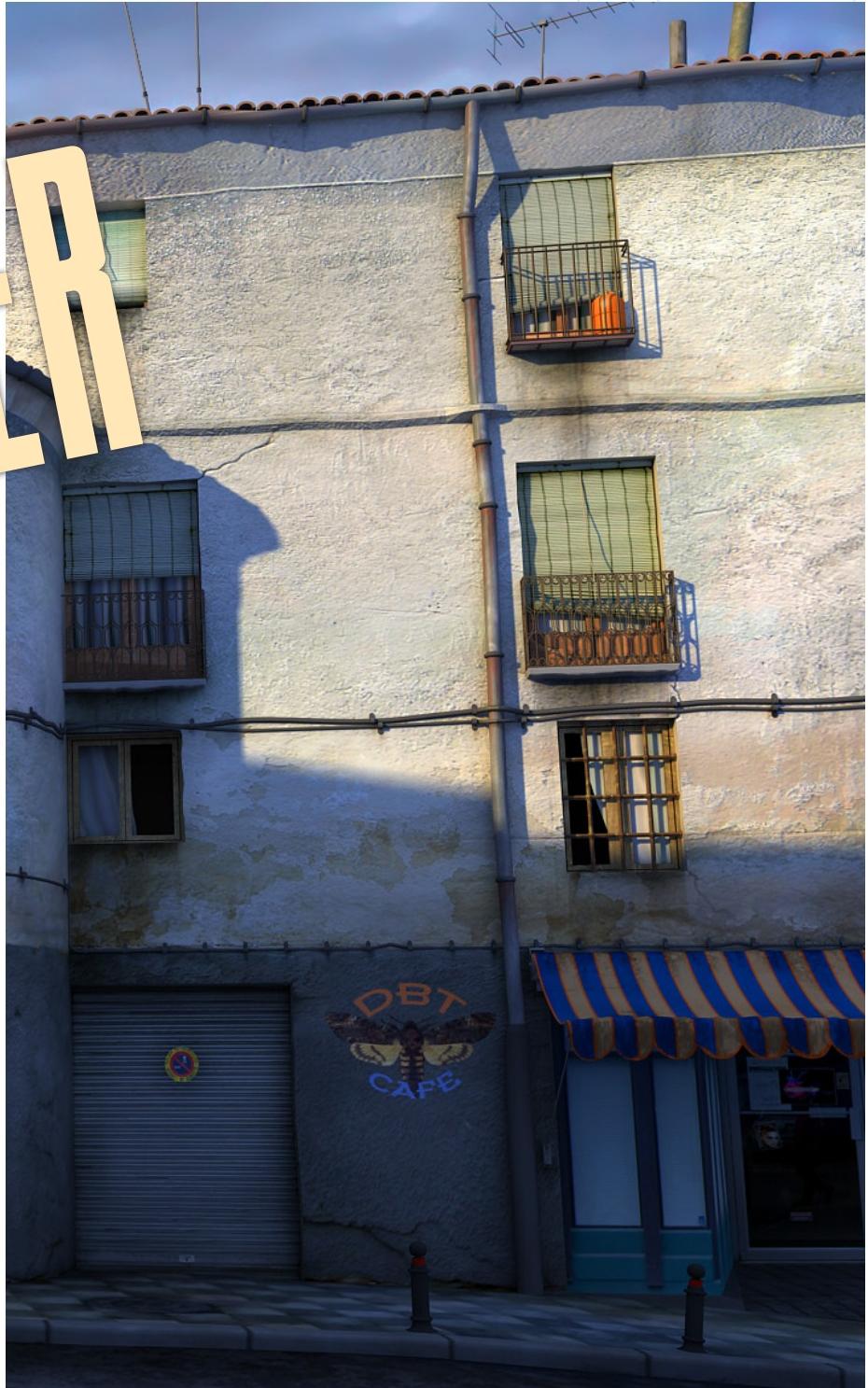
source the shadows will act in consequence; you locate your camera in the place that you want, you add volumetric effects and you even recreate complex physical behaviours, such as gravity, wind, cloths, collisions etc. and all that with an absolutely intuitive and not very technical method.

What is it about the relationship between technology and art that fascinates you so much?

There is nothing special about it but it just so happens that CG combines two tasks that have always interested me. Imagine being a young boy - fascinated by dinosaurs & aeroplanes (two very common likings in 8-year-old boys!). When you have a little money, you don't know whether to spend it on a Diplodocus book or a scale model of a Spitfire?! When you grow up, someone offers you a job in which you have to fly an aeroplane to study a group of dinosaurs. It's not an objective relationship between the two things, but you get to enjoy them both at the same time..

Much of your work composes of simple architectural scenes with an attention to detail. Can you explain your interest in this subject and the significance of light?

When we talk about architectural scenes I think about the pre-visualization pieces that the promoters use to sell their buildings. What I do is very different; I use big old houses as an excuse to express an artistic restlessness. On the other hand, those big houses have always been very interesting to me because, not only do they show their original beauty but also the marks and pathologies that time has left in their walls. Those marks grant a quality that make them original and irreplaceable and they communicate a homely sensation that Viz, with its cleanness and order, cannot show. The light that wraps the big houses can also reinforce that sensation and at the most magical moment in the day when the sun is hidden, the contrasts are somehow accentuated and the colours are saturated. In Spain, those colours are especially beautiful and I think you would have to actually see it with your own eyes to know what I mean.

Having looked at your renders I feel there is sympathy between your 3D work and the work of the American painter Edward Hopper with the exception that your scenes do not contain any characters. Do you think this is a fair comparison?

Hopper liked very stable compositions based on buildings and he used the light like an important aesthetic agent in the search of the formal balance in his work and in that sense I believe that it is an accurate comparison. However, Hopper goes much further than me when granting his work with an absolutely overwhelming peculiarity, reflecting the inner life and the most secret thoughts of the characters in those pictures. I don't even dare still to introduce the human being in my work and I hope to grow enough as "Cger" to make it some day.

You seem to have been very successful at implementing light in your scenes. Could you talk us through the way you approach this and any relevant techniques you use, most notably setups and renderers?

I believe that it is enough with having some understanding on how light behaves in real life, because to apply it in a 3D scene is relatively simple. The sky is a huge blue area of light that illuminates the objects that are directly below it and also those that are in the shade, and in CG we usually call this Global illumination, or GI. The very diffused shade that generates this enormous light produces an effect among objects that we call Ambient occlusion or AAOO. I usually give this huge area of light a very intense blueish colour to cause a strong contrast with the direct light of the orange sun. That dance of complementary colours produces vibrations in the image that move it away from realism but brings it nearer to a version of reality that is more surreal and personal. It is also important to work the

illumination in connection with the shader construction and with the texturing because they are elements that are interrelated. Many times when we are dealing with a lighting problem what we have to correct is simply the shader or a dark or too saturated texture.

Do the scenes represent real places that mean something to you or are they purely imaginative?

Many of my scenes are real places but I have always modified them to filter the elements that I don't like or to change them for others that reinforce the general mood of the work. For that reason I don't need to visit magnificent tourist sites to find architectural beauty since these can exist in any corner of my modest city witch I just have to interpret with my own style.

Have you ever been abroad and been inspired to represent scenes in various parts of the world where the light differs completely?

Unfortunately I have not travelled a lot and have just visited some European countries like Holland, France and Italy besides my dear Spain and it is true that there is something in the light that makes a difference. I still have not represented scenes from beyond my country, but I have thought of enlarging my frontiers a little to try to capture the peculiar colours of each place with the biggest fidelity.

One of your most recent images represents a room with numerous clues and traces about its inhabitant. Could you explain a little about the inspiration behind it and what prompted its creation?

It is very possible that the inhabitant of that house is myself because many of those hints are fragments of my own life. The tape-recorder in the window was the first device that I had in my life which I used to listen to music. I sat down at a table like that listening to artists or groups of the 70´s; for example Kate Bush whose picture you can see next to the window, and whilst I wrote in a notebook like the one that is sitting on the table.

Many of the books in the scene make reference to periods of my life, for example the names of the groups in which I have played.
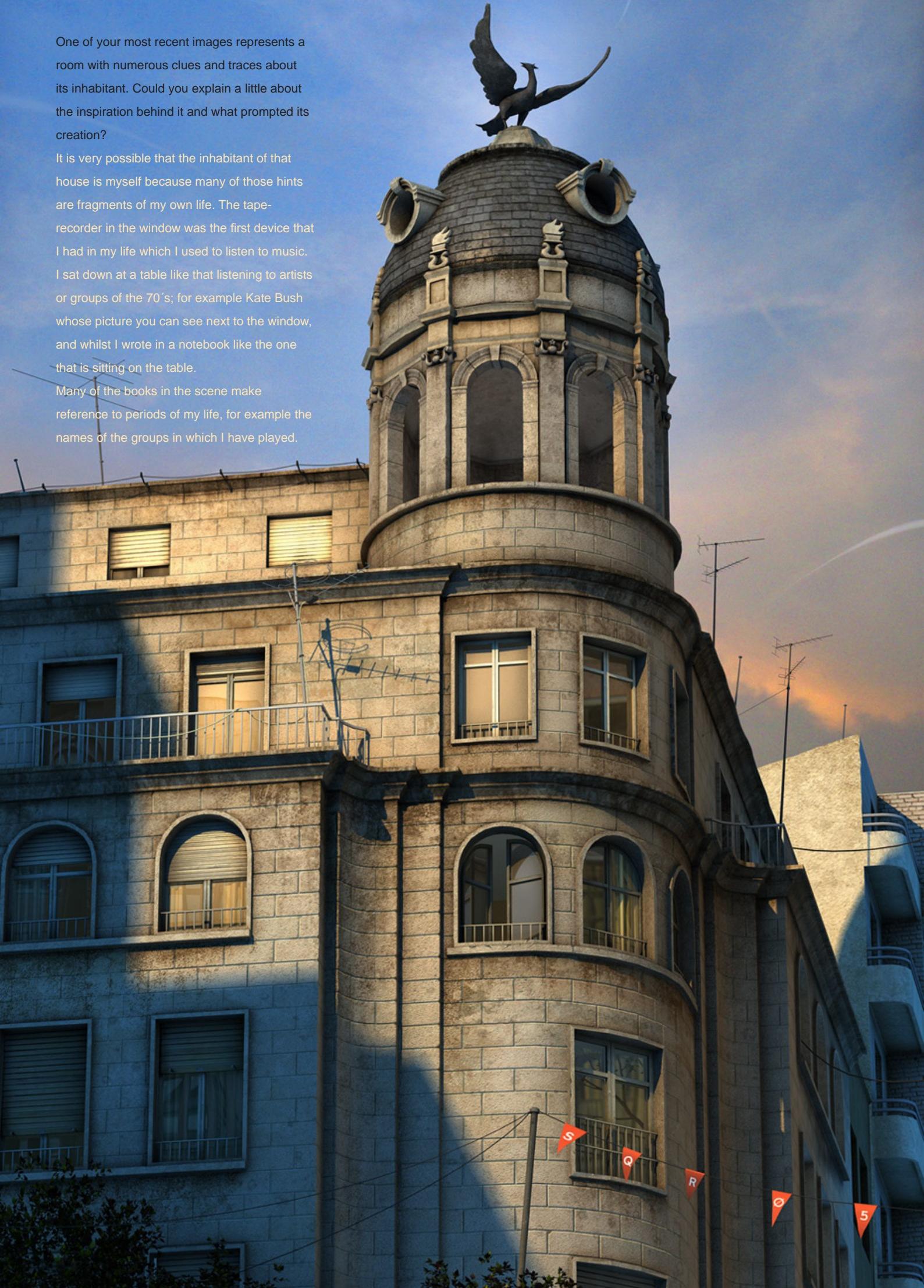
We see an empty ashtray because I used to smoke a lot but I gave it up 9 years ago. Pictures of John Lennon, Pat Metheny, Magic Johnson, H.P. Lovecraft, A. Camus and Kubrik, books of CG, the boat of beer, the recipient with coins and the dartboard just reflect some of my likings or weaknesses and the telephone is a technological symbol of communication. The bolt of the door symbolizes my necessity to have an impassable space which is only mine. I need to live in a family but with the possibility of isolation as well; I am a very sociable man but I need a good daily dose of solitude to work correctly.

Can you give our readers an insight into how you go about texturing your scenes?
First off I worry about unwrapping the UV's as best as possible since this task can facilitate the texturing phase a lot. Then I generate a greyscale map with information of holes and protrusions in the dirtmap or ambient occlusion style. Then I use texture baking to be able to edit it by hand in Photoshop. On the other hand I also combine in multiple layers different dirt maps taken out of old walls those that I edit with different tools and filters. I overlay photographic textures that I get in the street with a digital camera and lastly I paint the cracks of the walls, the graffitti, etc. by hand. I believe that it is very important to work the textures with a graphic tablet, because it also improves your drawing skills.

Aside from improving ones drawing skills, do you feel it is necessary to add in some hand painted elements such as graffitti so that the scene is not made up entirely of photographs?
I would not say that it is necessary but it is one more element that can solve a composition problem, to help provide some of the building history or to fill an empty wall. Each artist has their resources and in my case I use it to solve the kind of aesthetic problems by hand. I find

it simple to paint a crack rather than to find it in a picture collection. I believe that the artist has to manage as many elements as possible in the scene.

Do you think there is any relationship between your traditional work and your CG work apart from the subject matter or do you treat them as two very separate pursuits?

My education in painting has helped me a lot in my career in 3D because ultimately colour is colour and shape is shape regardless of which technique you use. I consider myself an artist and the fact of having dedicated myself to 3D or to music is purely casual. I could have dedicated myself to dance, photography or literature and with a minimum of technical skill I could have developed a similar quality. My painter years made me think a lot about the beauty of my environment and made me observe nature arround me and to analyze it and then to filter it across my own aesthetic sense. I learned that the most important thing is not to represent reality but to represent myself through reality; the artist doesn't discover the beauty of life and put it in his work, but rather transforms the disorder of life into Art and switching the environment that surrounds him for an order. For now, what we obtain in CG is a two-dimensional image maybe in motion, maybe not, but at least colours, shapes and a history of 2D space are exactly the same as the traditional painting, cinema or photography. It is possible that in the future we will build our own language in some way still unimaginable for us and, of course, closely bound to the technology and the Art.

JUAN SIQUIER

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Interviewed By :

RICHARD TILBURY
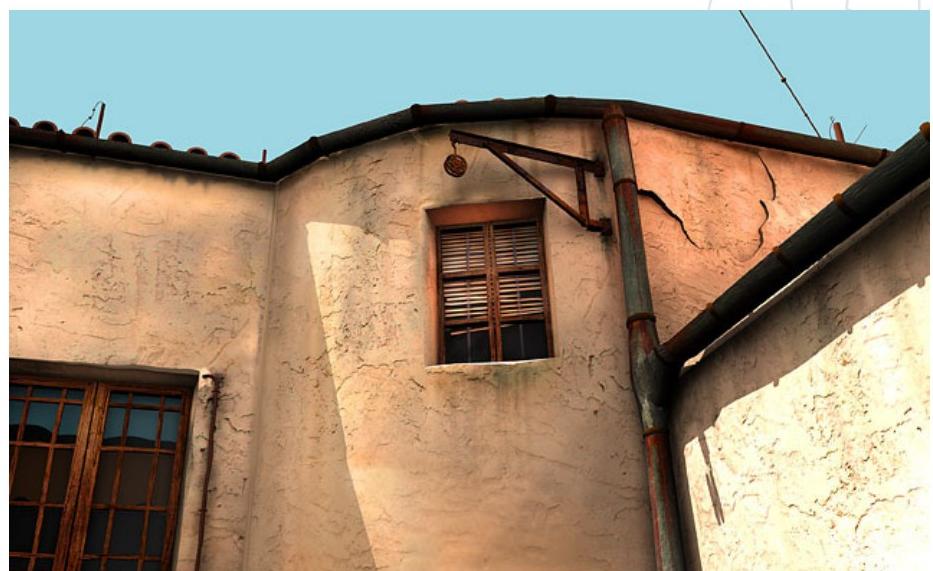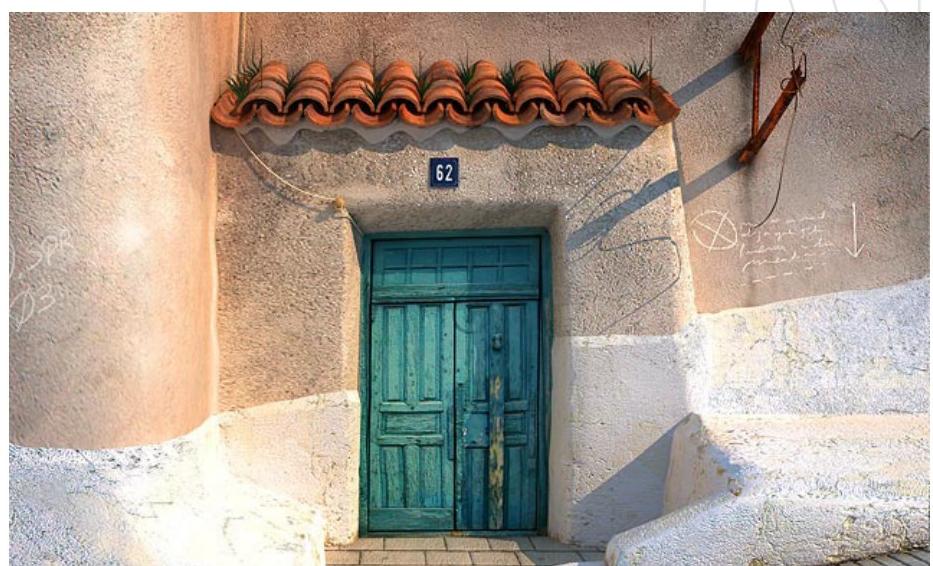
vitaly bulgarov

"An aspiring man must be strong not only by his intelligence but also his fist!"

Vitaly Bulgarov

Hi Vitaly, thanks for talking to us. Firstly can you tell us about your regular working day?

Yeah, thanks for inviting me! Well... let's get started. 7.00: The alarm clock summons my soul to this world and the mortal combat begins. Actually, the first part of the day I spend on my university studies, with the remaining portion of time going into my 3D... until the time at which my eyes close themselves. I sleep for a few hours and then everything starts again the next morning! hmm, if somebody asked me if I could have a magic ability, I would ask for the ability to be free of the necessity to sleep. We spend a third of our lives dreaming... aaagghh! What a vain waste of time!

So would you prefer to work 24 hours a day or do you just find that you need that time to answer these questions? ;-)

Hey, it looks like it wasn't so good from my side that I've been answering these questions for a month because I was so busy with my latest project. Yeah, I wish I could work 24 hours a day without any rest. I mean, not only 3D but working over myself in general. An aspiring man must be strong, not only by his intelligence but also by his fist! I'm against sedentary life, people should train both their mind and body!

And how does your work affect your personal artwork?

The only thing that my work makes me do with my personal art is to work as fast as I can. I'm so happy that I'm too busy because it is the main reason why I appreciate my freetime so much.

You have created a lot of 'evil' looking creatures, and then you create a house for a fairy! Do you prefer 'evil' or are you just inspired whatever the subject matter?

Ha-ha, I knew that one day somebody would ask me this question. Actually, 'house for a fairy' was created long before my 'evil' looking creatures. No more work of this kind after this. Only such unkind fantasies. However, it doesn't mean, that I'm as evil as my works. I'm a happy guy and not as ugly as my works!
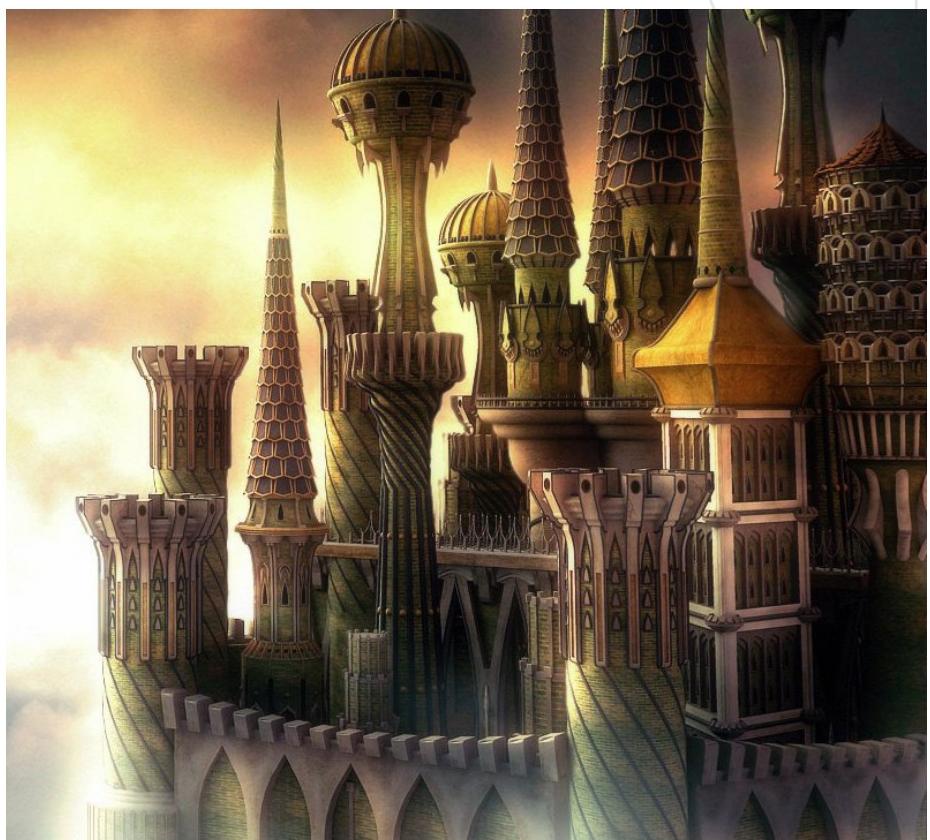
What made you change to the darker side of 3D characters? Were there specific influences such as dark comics or other artists?

I can't say I've changed to the "dark side of the force". I've been always dark, ha-ha! However, I can name some input from the dark side. It is the work of great artists such as Luis Royo and Gerald Brom... They have become classics to me. I would like to name also Aleksi Briclot and Daryl Mandryk. I love their shapes and colour very much!

Your characters are beginning to build into a 'series'. Did you ever intend to create a world for these creatures?

All my works are just poor attempts of my vision. I must develop the skills and maybe I will create something great by the end of my life. Yeah, you're right about the 'series', I'm going to try developing such ideas in the future... Well, I'll try to put more extreme feelings into my creations. I also think that it's a good way to show this when you show not only a small piece of your world, but when you give as full an image as you can. It's really hard and deserves to die for it. just kidding!

The Inflamed
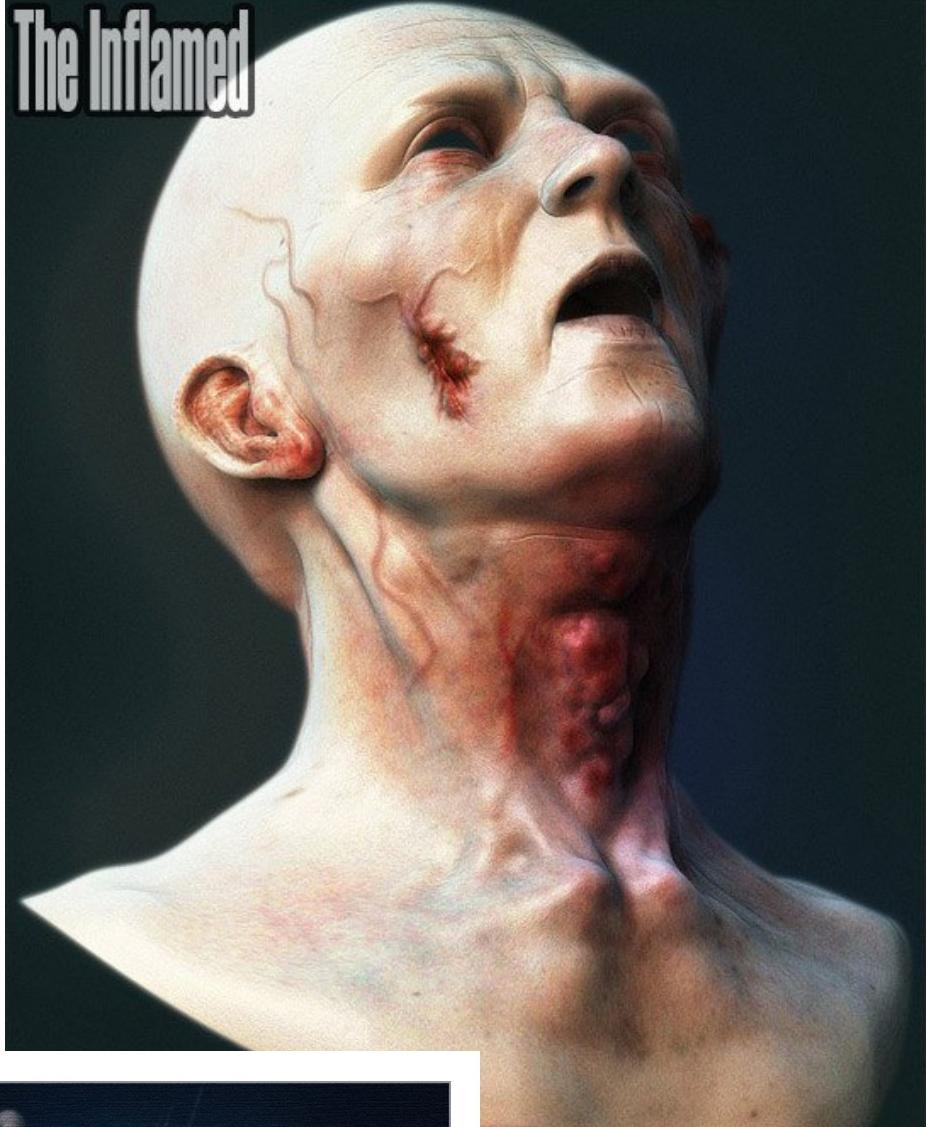
THE DISABLED
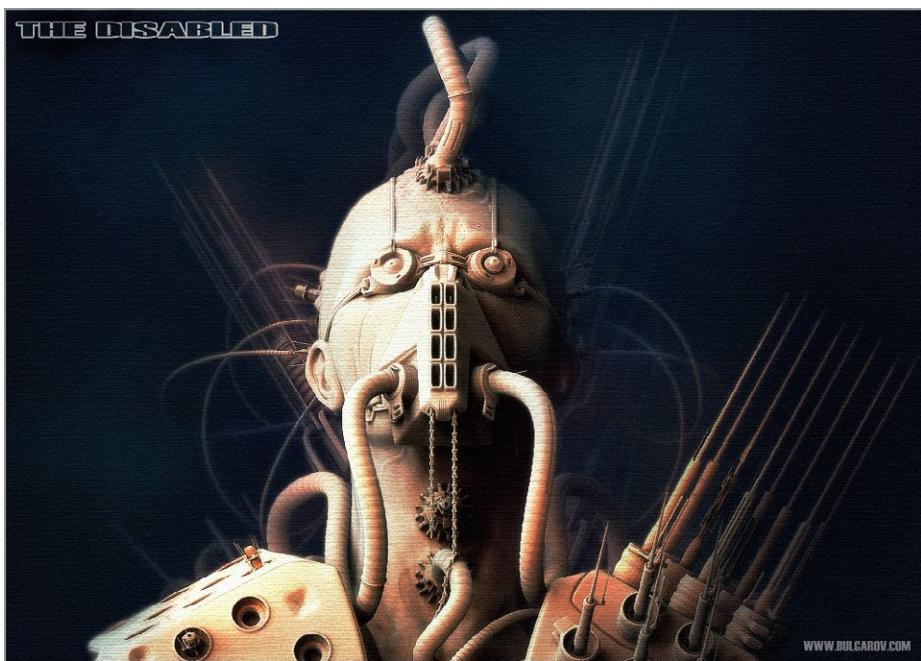
THE FACTIONARY

Most of your work has been character based, have you any visions of the landscapes and environment that these characters will live in?
Yeah, it's a cruel, sinful world... a world without laws, without hope... only those perfectly prepared to fight will survive...

Have you considered making these environments in 3d as a project?
Actually, I'm going to make a project representing this world. And it will consist not only of characters but also of environments too...

What has inspired you the most?
Deep feelings inspire me. Many things create these feelings. But the most powerful one is music. When I listen to music I can see images in my mind. The imagination wakes up when I "see" profound melodies. It's really great in concept art when you need for "strong spontaneous strokes". Actually, I can't say exactly what inspires me the most. I'm always full of ideas, lack of time is the only reason why I can't bring all my "marasmus" to life.

Would you have some advice for our aspiring artist readers?
Aspiring man has only his will and his patience to achieve anything he wants.
Work... Work hard...Work as hard as you can!

VITALY BULGAROV
bulgarov@yandex.ru

Interviewed By :
TOM GREENWAY

The Antichrist

V.Bulgarov 2005

EVE
ONLINE

KÁRI
GUNNARSSON

Art Director for one of the biggest MMO (Massively Multiplayer Online)
Game's today, EVE Online, Kári takes the time out to talk to us about
each of the races that inhabit this huge space and the ideas behind
their creation, whilst giving us an insight to the future of EVE...

Kári Gunnarsson
Art Director
CCP Games

Can we have a brief introduction from yourself; age, location etc, and for the Eve project..What is it? How many work on Eve? When did the Eve project start? etc....

My name is Kári Gunnarsson (25) and I am the Art Director for EVE Online, a single-sharded Massively Multiplayer Online Game. I came into the project initially back in 2000 as a 2d/3d Artist, which was about the time when the project came into full production. At the time we were about 20 employees, which

quickly grew until the game's initial release in 2003 (and keeps growing). Currently we have around 90 employees, most of them working here at CCP HQ, Reykjavik, Iceland. Given the game's frequent expansions and updates, CCP is hard at work all year round making new ships, characters and other content to ensure that the game keeps being fresh and exciting.

Wow, that's some expansion! How is your working environment there at CCP HQ?

We just recently moved into a new and much larger building since the old place was stopping us from expanding. This has made the work environment even more pleasant then it already was. CCP has always kept a very strong family feeling within the company. We have a chef that makes excellent food for

lunch and sometimes dinner. While that family feeling is slowly changing due to the sheer amount of employees that we have now, we still maintain that friendly atmosphere that makes this a great place to work.

How is your team divided up? Concept, 3d, texturing etc? Do you have specialist individuals?

CCP has always had a rather small art team, requiring each and every member to contribute to parts of the project that are often outside his or her own speciality. We have one concept artist that designs almost all the 3d models that need to be built. Since we have several races that the player can choose from within the game, we try to divide the modelling tasks in such a way that one 3d artist handles one of the races exclusively. This helps define the racial variance even better, as each artist contributes his own touch to his creations. Aside from the 3d and texturing artists we now have a full time illustrator and junior concept artists.

I can imagine many readers now thinking 'what a dream job, designing Sci-Fi concepts every day!' Is the team ever expanding or would you now say it is complete?

I would agree with those that would consider this a dream job, and I'm pleased to say that

we are always looking for great talent out there. While we are still expanding, we are getting increasingly demanding of the talent that's applying for a position at the company. It never hurts to apply though, and we consider each application with a great deal of thought.

What are the inspirations behind the designs?

Well, since the game has so many different objects and designs, this question might beg for a few pages in answer. But since multiple pages might be a bit outside the scope of this interview, I can give you a small sample by taking the four player races (Amarr, Caldari,

Gallente and Minmatar) as an example.

AMARR

With the Amarr being a fervently religious race, yet arrogant and lusting for power, we took a look at alot of Gothic cathedrals and other religious architecture. The shape of their ships often resemble fangs or vulture's beak, which I think translates their character quite well into their architectural designs.

"THE SHAPE OF THEIR SHIPS OFTEN RESEMBLE FANGS OR VULTURE BEAKS..."

AMARR BATTLESHIP

AMARR FIGHTER
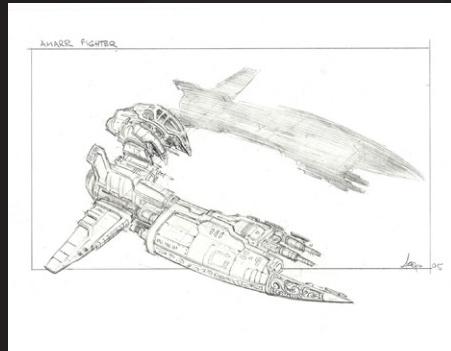
CALDARI

As for the Caldari, being a very disciplined and militant race, we drew designs from modern military hardware, including T-72 tanks, Apache helicopters and German WWII design elements. These all have jutting, sharp edges and a solid feel, that in turn describes a lot about how Caldari tend to do things; powerful and practical.
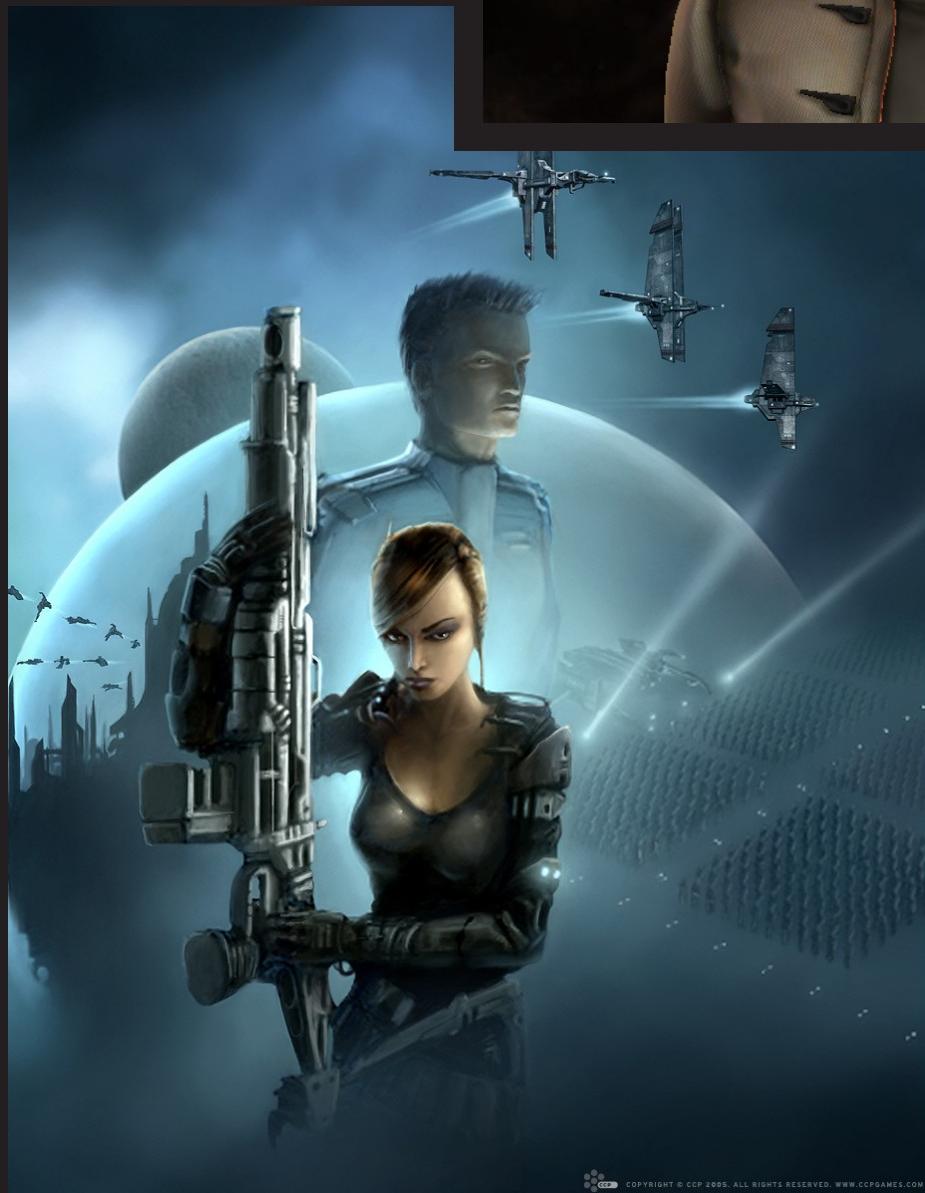
"...THE CALDARI, BEING A VERY DISCIPLINED AND MILITANT RACE, WE DREW DESIGNS FROM MODERN MILITARY HARDWARE..."

industry
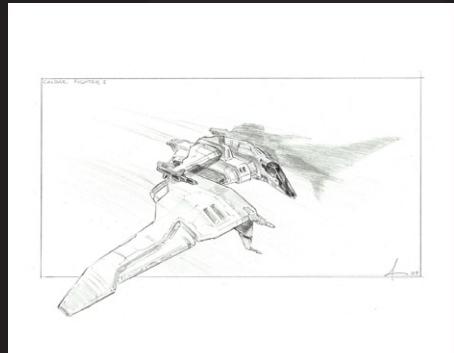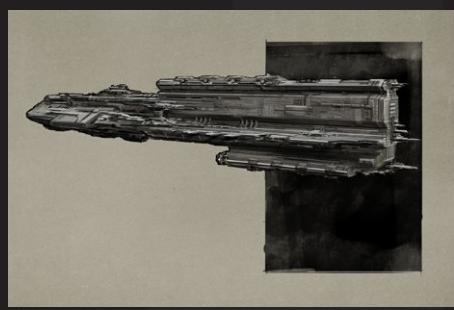
GALLENTE

The Gallente have a taste for high-tech luxuries and aesthetic curves in their designs, and so we studied various vehicles including racing cars and Rolls Royce. Some of the Gallente designs were also inspired by the work of Jean Giraud (Moebius) and other artists.
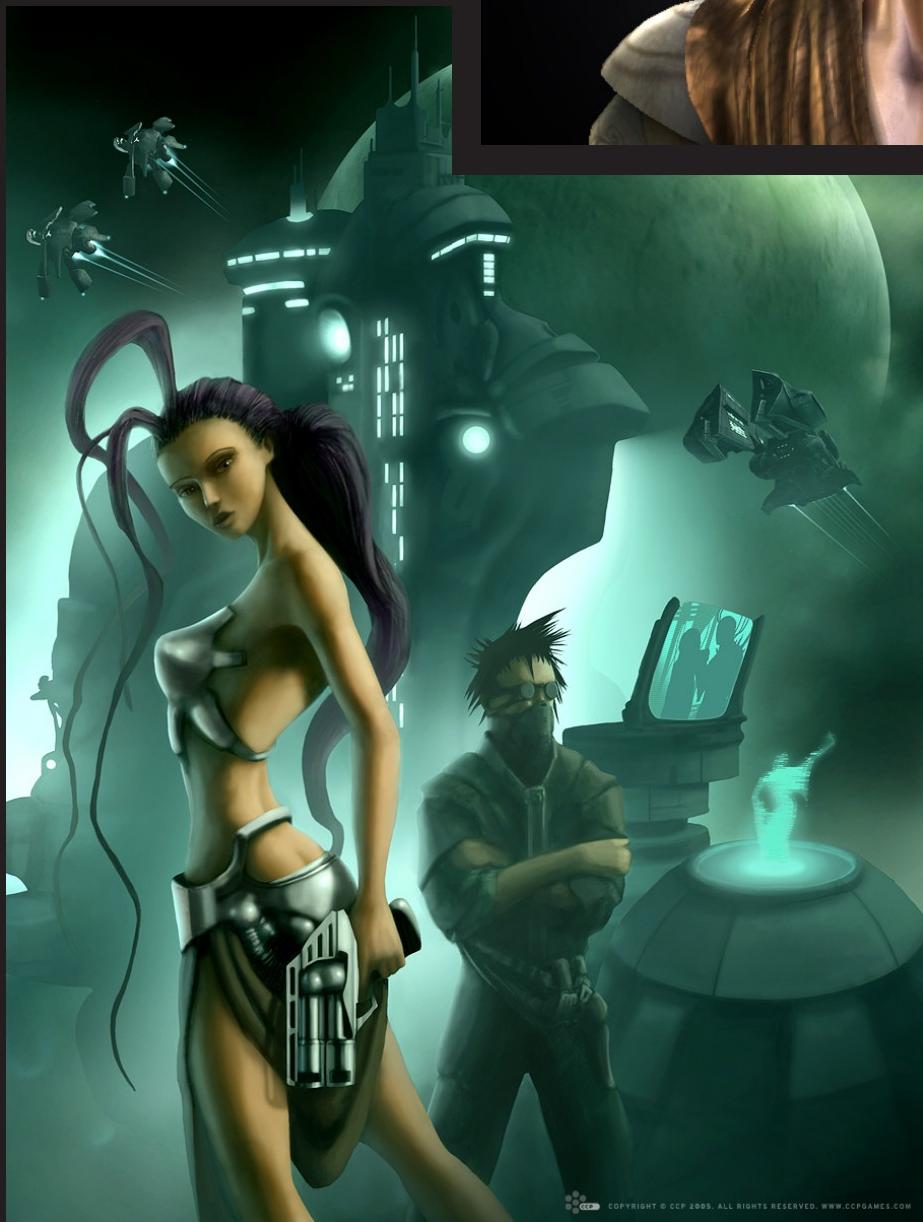
"...Gallente have a taste for high-tech luxuries and aesthetic curves in their designs..."
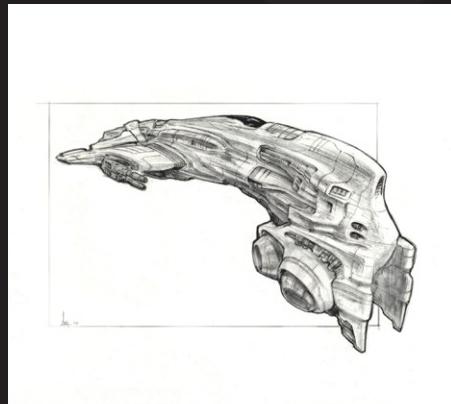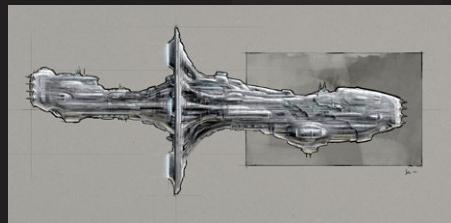
When it comes to the Minmatar race, being the underdogs of EVE, we studied industrial machinery, worn and rusty ships (the sea-faring kind) and solar panels and details on near-modern space stations and rockets.

"...BEING THE UNDERDOGS OF EVE, WE STUDIED INDUSTRIAL MACHINERY, WORN AND RUSTY SHIPS..."

industry
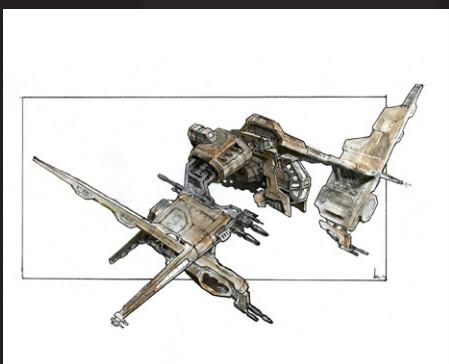
Very interesting Kári, how is your research material sourced? Do you get it all from the Internet?

While perhaps the majority of our research material comes from selected sites on the Internet, we have a collection of books here at the office that we frequently skim through when we need to refocus. These books include Star Wars design books, the work of H.R. Geiger, various volumes of drawing, painting and anatomy, an array of digital art books by Ballistic Publishing, to name a few.

We understand that Eve is a continually expanding game/universe, does this mean you are continually creating new designs? Will this go on forever!?

Yes, with each and every content patch we're creating new designs including ships, stations and characters. So CCP is working full-time making EVE's universe even richer in the amount of content the player can encounter or possess. We will continue adding upgrades and additions as long as we have people playing the game. There is really no end in sight :)

That's incredible, I find the concept of MMO's (Massively Multiplayer Online) amazing in this way, I guess it will change and adapt with the times for an indefinite amount of time. Does this apply to continually making it more advanced for ever improving players computer specs too?

What we will be doing are graphic and code updates in the future, utilizing modern hardware to it's fullest. There just might be an update project *hint* *hint* that hasn't officially been announced yet (stay tuned!). It's important to keep the game up to date, so we never fall into the "that old game" category. However, EVE has always been very forgiving for people with low-end graphics cards if all the settings are turned off. While we won't support ancient hardware forever, we will continue to support as wide a range of computer hardware as is logically viable.

Can you sum up how his different working on a MMO (Massively Multiplayer Online) game to a normal console game?

One of the great things about working on an MMO is the connection between the developer
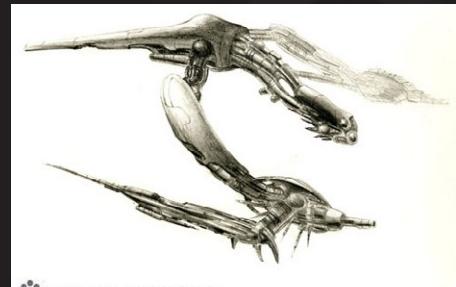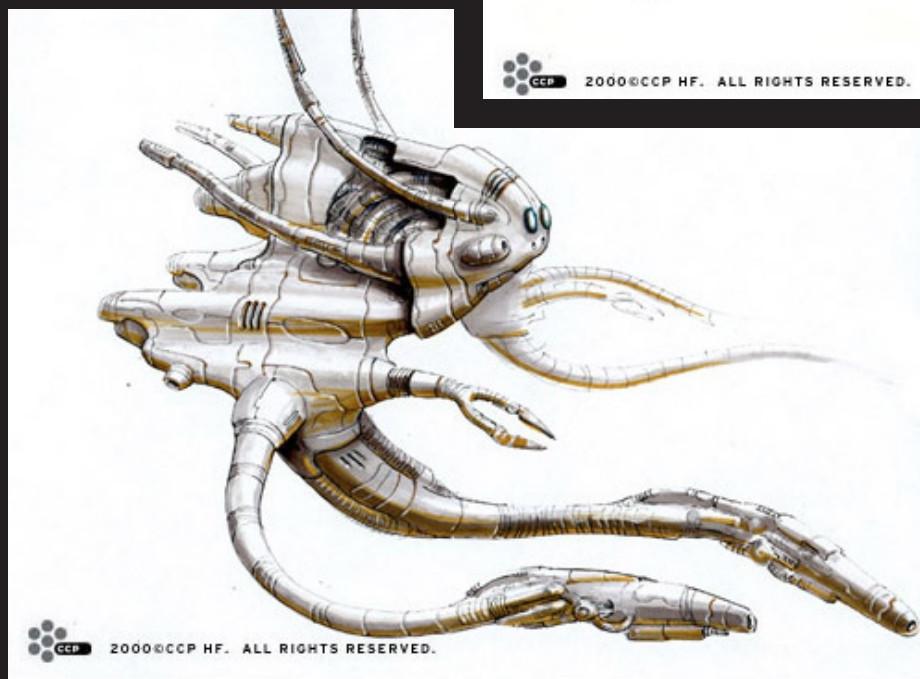
and the community. It's often invigorating to hear people talk about the newly added graphics in-game and know that they'll be flying the ship you built for years to come. On the other hand, you must be ready to dedicate yourself to the project for a long time, as opposed to the short development cycle of the normal single player game (be it console or other platform).

Well your hard work and team's dedication is very apparent in the beautiful imagery you have produced and the incredible following 'EVE Online' has. Many thanks for taking time away from your latest creations to talk with us Kári, I hope we have not distracted you too much because we cant wait to see what you come up with next!

Thank you for your kind words. I urge those of

you who haven't tried the game to download the free trial on our homepage www.eve-online.com. For those who are playing already; keep your eyes peeled as the future is bright and exciting times ahead in the world of EVE.

If you would like to know more about CCP Games and Eve Online then please visit their websites at:

http://www.ccp.cc
http://www.eve-online.com

Article By :

TOM GREENWAY
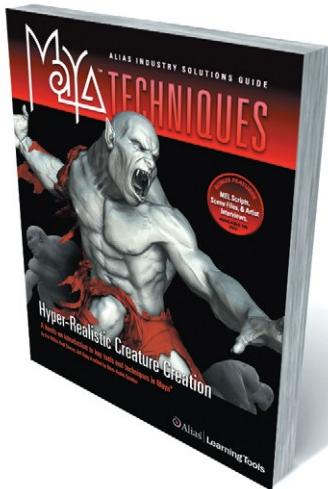
HYPER REALISTIC CREATURE CREATION

by Erick Miller, Paul Thuriot & Jeff Unay

Hyper-Realistic: *"Above or beyond the quality of convincing existence, to the point of fantastic disbelief."*

This is how the term, hyper-realistic is defined in the new Maya Techniques book "hyper-realistic creature creation", and certainly is the focus of what the reader will be learning. The first part in a new series on hyper realistic creature creation, this book includes in-depth looks at advanced techniques in modeling, unwrapping and rigging. The authors, who have worked on some of the most complex special effect films to date, are not only good enough to share the tools and techniques that make their characters come to life, but also give tips on how to create work in a production pipeline setting. This gives the reader a better understanding of what it's like to do real production work. From the instant
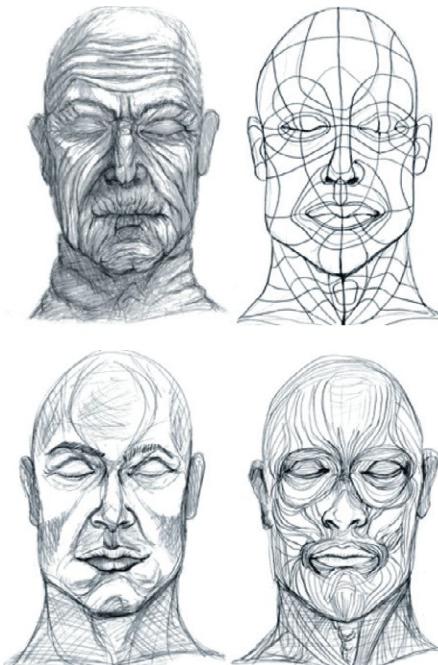
you look at the very striking cover (featuring an impressive looking werewolf like beast), you know this book is a little different than most of the modeling/rigging tutorial books out there. It should be noted, this book is not for beginners. It almost demands a good intermediate level knowledge of maya. This is not a straight step-by-step tutorial on how to create a character, but more about looking into the techniques and tools needed to give your characters that extra edge. It does include tutorials, yes, but if you just started using maya, you're best to familiarize yourself with the program first, before picking up this book. If you're a comfortable maya user however, and are looking to take your work to the next level, then this book is for you. The werewolf like creature on the cover ("The Beast" as he's referred to in the book) is constructed from the ground up through the course of
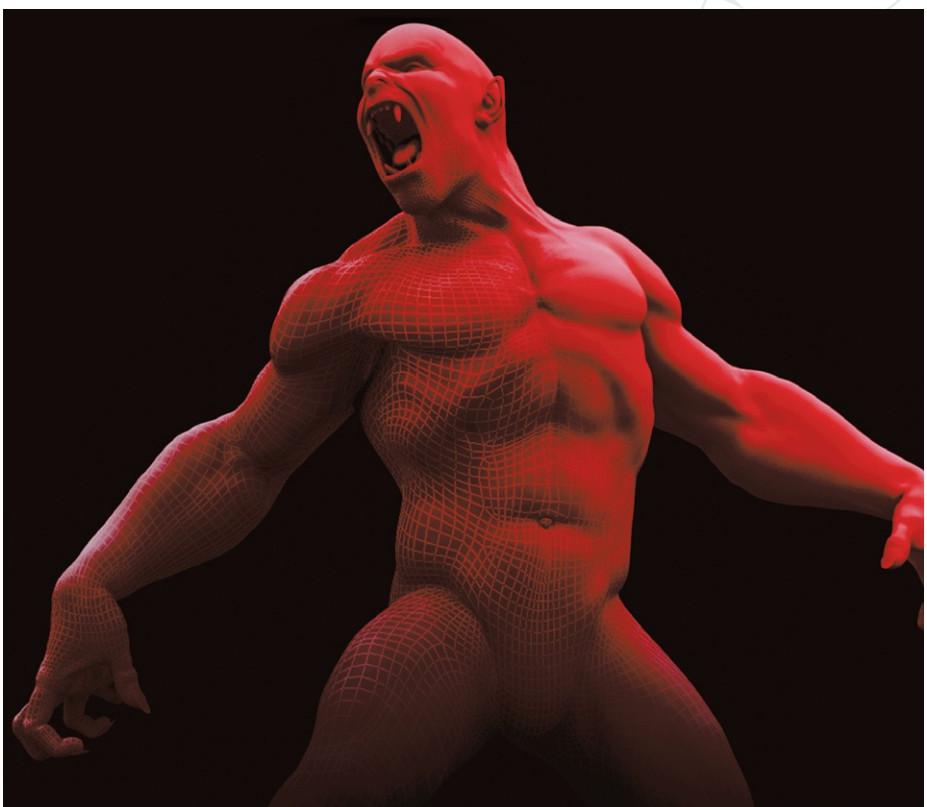
the book. The modeling section of the book mostly deals with techniques on how to make your character read well on screen. The book delves much deeper than any online tutorial on the subject of character modeling, and really forces the reader pay close attention to things such as anatomy, edge flow and topology. It also teaches the reader how to polish up your finished models before it would be handed to another artist for texturing and rigging. Very handy for those who are looking to get into the industry. The texturing section of the book is fairly light, and deals mostly with properly unwrapping your model in the most efficient way possible. It doesn't go into painting textures for your character, or even touch on photoshop at all. This book solely looks into the maya side of things. That being said, the unwrapping tools and tips the book gives, are very good and should only improve the speed and quality of your unwraps. Where this book

really shines though is in the rigging section, which almost 2/3 of the book is dedicated to. The authors clearly illustrate that rigging is one of the most involved and complex processes in the creation of a CG character, and they pay very close attention to each and every aspect of rigging. The Beast is rigged with as much care and detail as if he were being rigged for a feature film. The book takes a deep look into each section of rigging, from the building of a rig, to the binding and skinning to the beast. Again, the book takes the perspective that the beast is being made in a production pipeline, and really impresses on the reader what is
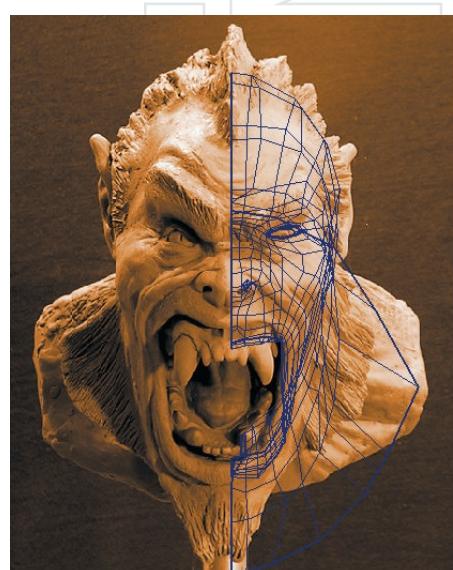
needed in a good rig in order for an animator to make full use of the character. Though it doesn't look into every aspect of character rigging, it does deal with a lot of the more advanced techniques you're not likely to find online tutorials for (such as corrective blend shapes, and using influence objects to simulate muscle movement). And if that weren't enough, the book devotes an entire section on facial rigging and takes an in depth a look into the setup of a good facial system. The reader is given a look into many of the different techniques used to create a facial rig. As well it goes into bringing to life those minute details in the face, that really help sell a shot, such as creating fleshy eyes and rolling lips. It also looks into the use of clusters and how to set up controller objects to animate your face with. Online facial rigging tutorials are even more rare than full body ones, so just for the rigging section alone, this book in invaluable to people

looking to bring new life to their characters. There's a final section of the book looking into a couple of miscellaneous techniques to add realism to your character. Such as using driven displacement maps to create morphing skin features when using blend shapes. And creating a realistic skin shader by combing together different layered render passes. Though these tips are useful, you shouldn't be looking to this book if you want to learn how to create realistic textures for your creature. The book also comes with a DVD-rom full of movies, scene files and MEL scripts sourced

in the tutorials. It should be noted, this book was written using the new Maya 7.0. This means all the scene files on the DVD are maya 7 files and won't open on older versions of the program. However, they are all saved as maya ASCII files, so with a little tinkering in notepad you can get them up and running on any version of maya. The MEL scripts are a really great addition though, and include a couple very useful ones that are sure to speed up your workflow. This is a very impressive book. From a rigging standpoint alone, it has few equals. If you're a maya user and are

looking to take your work to that next level, this book is highly recommend and will really help you grasp the fundamentals of what it takes to make your work production quality. Even for industry professionals, I'd still recommend this as a good book to have on your desk. It's detailed and thorough and, perhaps most important, deals with a really great looking creature design.

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THE
GALLERIES

Every month 10 of the best 3D digital images from around the world

The Captain

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See the making of for 'The Captain'
in July's issue

Modern Art:
A Perspective

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MODERN ART
BECAUSE *REAL* ART IS JUST TOO DARN HARD

Comatule

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See the making of for 'Comatule' in July's issue

Forgotten Things

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Vampire Hunter I

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The Ship

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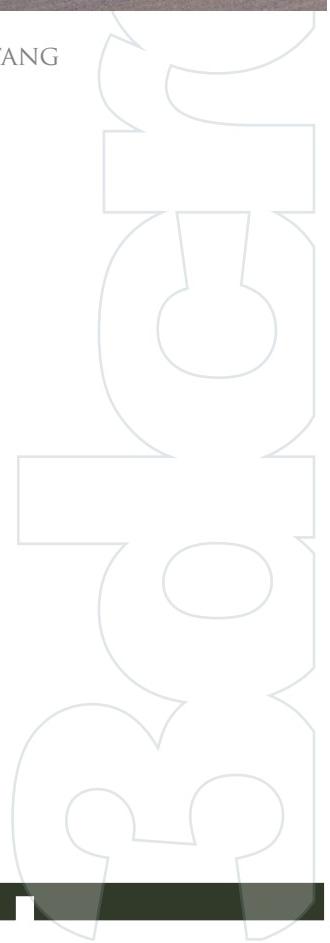
Fat Mafia Boss
Sven 'Dean' Rabe
d-e-a-n@gmx.de

Look from the past
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theo@euqahuba.com
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COLIN AND CUMBERLAND

Axis Animation

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Welcome to our ongoing tutorial which will provide a step by step guide to building a low poly character based upon a model by Seong-Wha Jeong. Over the next eight months we will be covering how to build, map/unwrap and texture the character. The tutorials can be found at the back of the magazine. You can reach them quickly by typing the page number you require in the page number box.

TEXTURING A
SCENE
PART 2

In this tutorial we shall texture an environment that has already been modelled and mapped (Fig 1) ready for a low poly character which we shall go on and texture and eventually place in the scene later on. In this case it will be an underground armoury set in the desert where our nomad character will equip himself ready for battle.

ARMOURY
03

Texturing a scene Part 2

Well our scene is starting to come together and now seems like a good time to put a texture on the focal point in the scene - the gun rack. I used as a base image Fig 01 which is a photo of a paving slab but with a bit of tweaking it formed a reasonable starting point. Then by duplicating the wireframe layer, setting it to Soft Light and adding some Gaussian

fig 01

Blur this became the initial highlights layer that traced perfectly the edges of the object where the light would catch. I have bevelled the more obvious edges in the scene but not all of them and this technique of copying the wireframe overlay is a handy method of softening corners and describing the reflected light. After adding a few selection areas and making some colour changes the first stage is complete and we can see by comparing (GunRack_BaseTexture) with (GunRack_Stage1) how our texture has translated onto the mesh.

fig 02

fig 03

The next stage is to add some vents which I took from metals001*04 by selecting a small area and scaling it to a suitable size. By adding a couple of Layer Styles (Bevel and Emboss and Stroke) as seen in (Vents) we can help
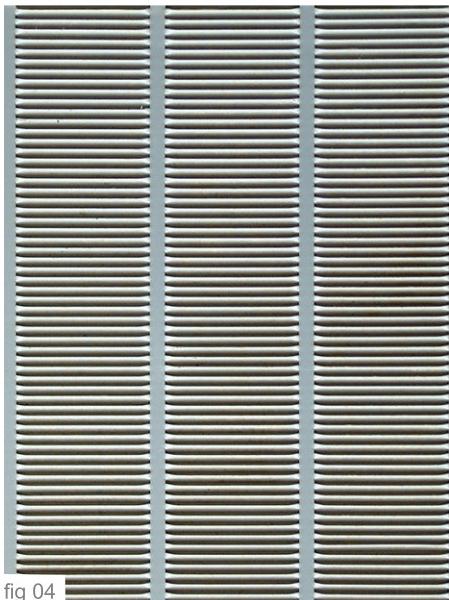
fig 04

fix them onto the main panel and show them catching some of the ambient glow which will eventually emanate fron the charge panel below. In terms of the sections that will hold the guns in place they are created in much the same way along with the panelling and buttons which all take advantage of the Bevel / Emboss and stroke effects. The settings may vary with each but the principal remains the same. It is a relatively swift and effective way of adding detail through a texture especially when used in conjunction with a bump map. When we switch all of these layers on we can see the difference in (GunRack_Stage2) compared to the previous stage. (Fig 03)

fig 05
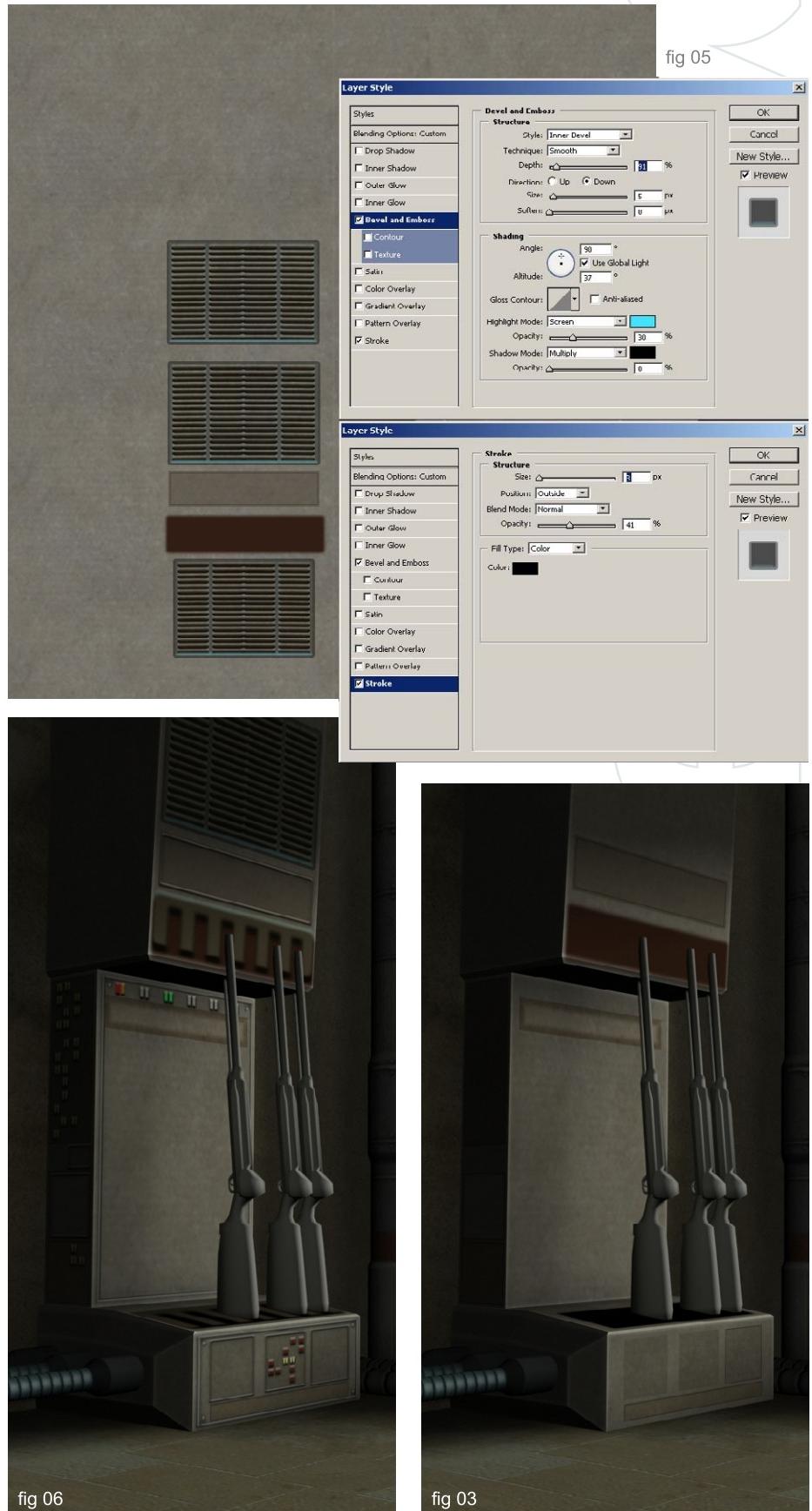
fig 06

fig 03
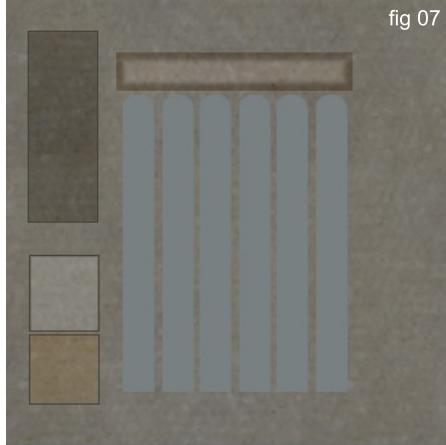
fig 07

Having made a start on some of the finer details this is a good time to begin painting tha main aspect of the rack which is the charge panel showing the energy status of the rifles. In order to do this we first need to make a simple series of shapes that correspond with the number of rifles capable of being stored and which align with the slots that hold them, in this case six. (ChargePanel01) After this it is a case of applying four Layer Effects with the following parameters (ChargePanel_ DropShadow / Bevel & Emboss / Inner Shadow / Outer Glow) which will eventually culminate in what we see in (ChargePanel06).

DropShadow

Bevel & Emboss

Inner Shadow

Outer Glow
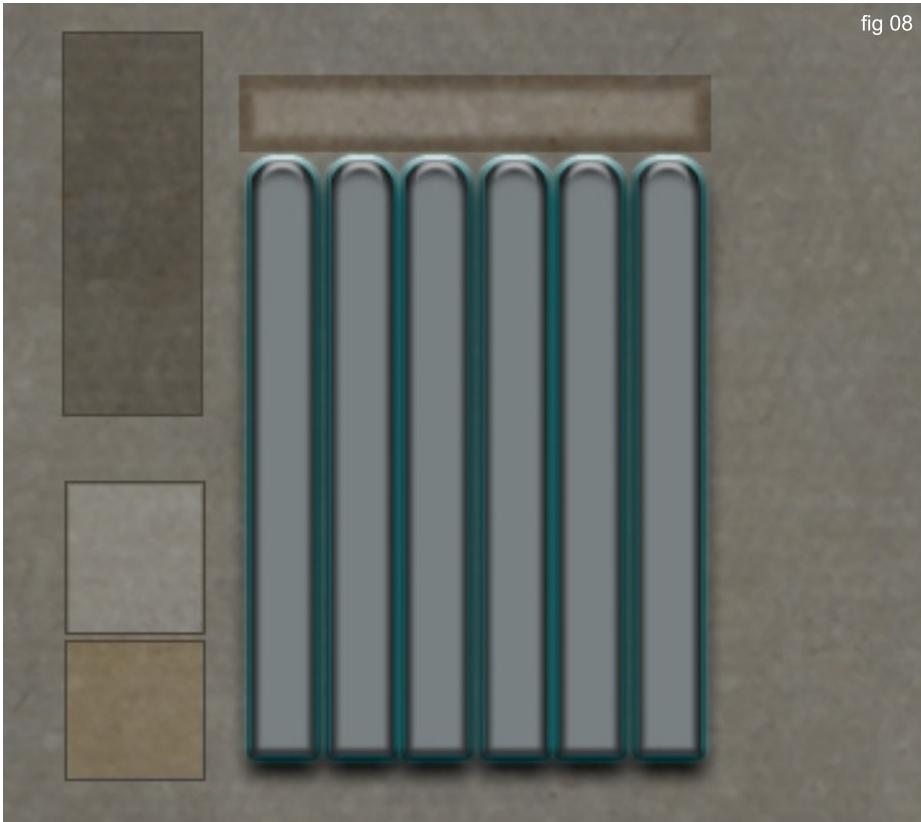
fig 08

Then by adding two more layers representing some coloured progress bars (set at normal 44 % opacity) and overlaying a thin line around 3 pixels wide to represent a fully charged weapon with settings as seen in diagram (ChargePanel_Glow) we are at a point where we can start to add the final details. Note that in order to give the fully charged bar a glowing quality it is best give it a colour similar to the thin line which is drawn on top as opposed to the green colour.
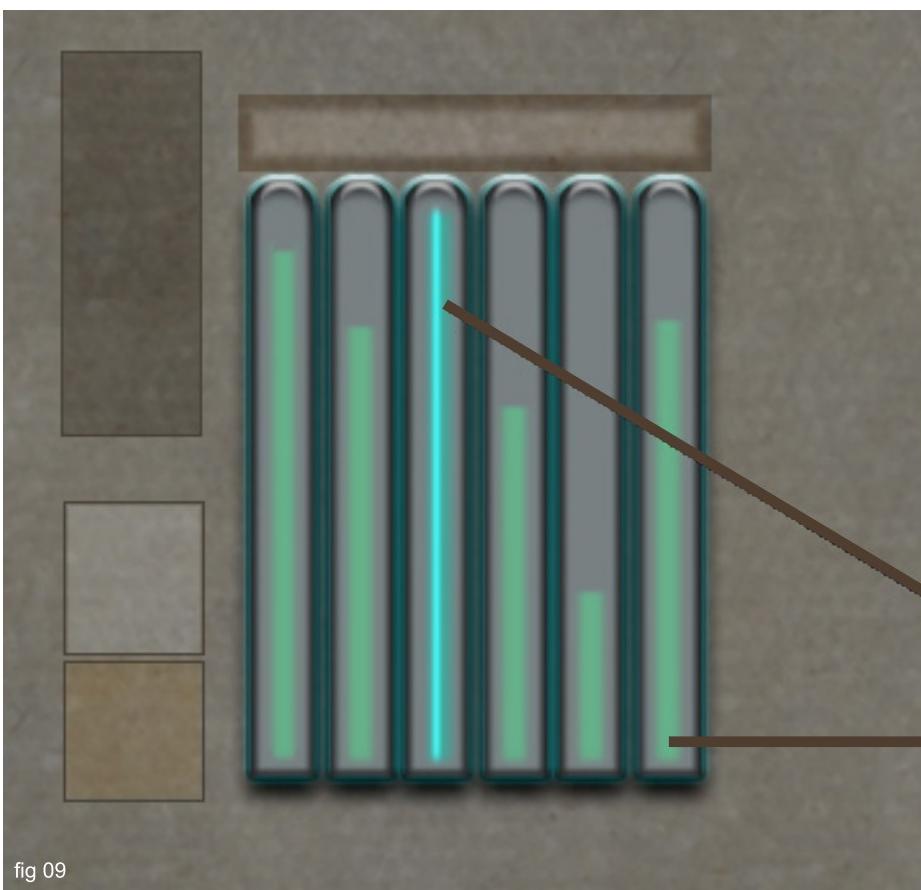
fig 10

fig 09
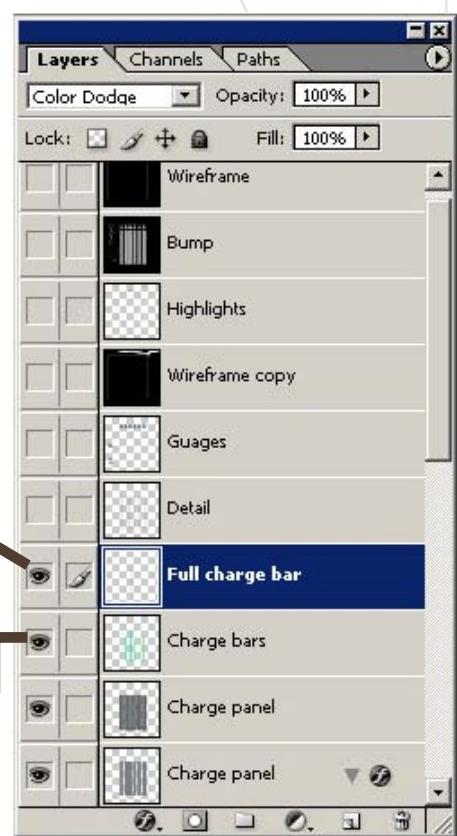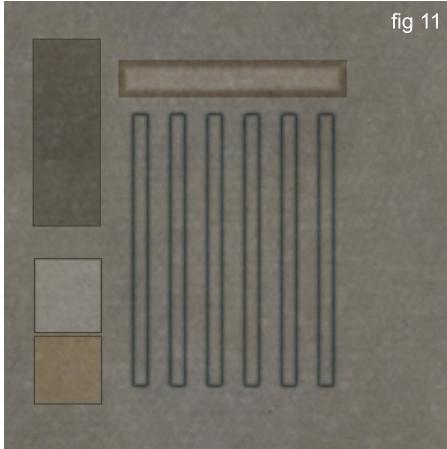
fig 11

One final little touch involves adding a few lines around the bars to help give the impression that we are looking at cylinders and not a flat display panel (ChargePanel_Detail). When we put all this together and apply it to our scene this is how it all looks (GunRack_Stage3). All that remains to do now are a couple of finishing touches. I added a group of guages on some of the display panels (Fig 13), a few highlights (gun holders) coupled with a shadow under the overhang and to complete the colourmap I used a dirt map along the left edge to help push it up against the wall. In the cae of the guages I downloaded some pictures and then altered them to fit in with the style.

fig 13

fig 12

By making a bump map that contours the display panels and buttons we will help give them a more three dimensional quality and when applied we arrive at our final texture for the gunrack (Gunrack_Final & 15). Well that has essentially covered the bulk of our scene and the various techniques used to produce the numerous effects. We have all our walls and floor mapped along with the pipes, power cables together and the main component that comprises of the gunrack. Applying the corresponding map to the door above the steps will mean that all the geometry in the scene has now been mapped and nothing remains but to add finishing touches. The walls in the scene are ok as they are but are a little bare and could do with some extra detail to help create more interest. As a result we are going to add some control boxes and metal panels along with some small drains, wall mounted pipework and more power cables. In this instance they shall be produced purely in 2D by making a few new layers on the existing texture, a fashion typically used in Games development. The methods of creating these refinements follow similar approaches

fig 14

fig 15

fig 16

1. Create a selection area that defines the object and then block in main colour.

2. Apply Drop Shadow and remember to leave the "Use Global Light" box unchecked as seen in (Global_Light). Note the reason for this is because the orientation of each component on the texture is different with respect to its position in the scene and so shadows will need to be cast in different directions in order to look consistent with the light source.

3. Either use a Bevel and Emboss or apply highlights and shadows by hand. At this stage I applied these directly onto the same layer to keep things simple.

4. Add details such as labels, rivets and buttons.

5. Finally add in any inconsistencies such as dirt, reflections and scratches.

The method of using Layer Effects such as Drop Shadow and Bevel and emboss can be widely used as a starting point to creating the illusion of perspective on objects that are not really there but often there is no substitute for manually painting in the necessary effects and details. It is best to open up the dialogue box and experiment with the various settings and observe the effects in the render but more often than not it is a case of trial and error until you arrive at a satisfactory result.

The five points illustrated above can be done on new layers but if you feel confident then there is nothing wrong with painting straight onto the same layer. You may also find that the contrast has to be increased on some of the areas that are in shadow or the brightness turned up so that the details are not obscured completely but what counts in the end is how everything looks in the scene. I also incorporated some small vents (Fig 17) at the base of the far wall and put in some little floor lights on the stairs. These may not seem too crucial but all these details add up to help make a more rich and interesting environment.

to those already outlined and as a result will not be elaborated upon further as it will mean going over old ground but there are a few points to bear in mind when adding such extras. It is important to remember where the main light source is coming from as this will dictate how successfully they convey a solid, three dimensional quality in terms of where they cast shadows. In the case of the wall panels, control boxes and pipework I applied a universal set of rules that applied to each component and varied the parameters to cater for the different positions they occupied in the scene. These were :

fig 17

It is finally time to bring in our character and get him ready for battle by equipping him with his trusty rifle. We can turn on the main power supply in the scene by switching on all the lights which will give the gun charger an atmospheric glow which casts light across the floor and also activates the control panel next to the steps. This just about concludes the chapter then which has culminated in a completely textured scene in which to place our character. We have covered a number of techniques which are relevant to Games development and the restrictions imposed by real-time rendering as well as touching on a few hints and tips that may be included under general texturing principals. We have learnt that by substituting geometry with painted aspects we can reduce the polygon count in a scene without compensating on detail as well as realising the value of integrating the effects of light and shadow into the texture itself.

Tutorial By :

Richard Tilbury

Email Address

✿ 3d02.COM
The Finest 3d Model Store

3d02.com. Commonly known as a high quality 3d model store, one of the premier stores of digital assets offering ready to use CG 3d models, and an open platform allowing artists to publish and sell their 3d models online
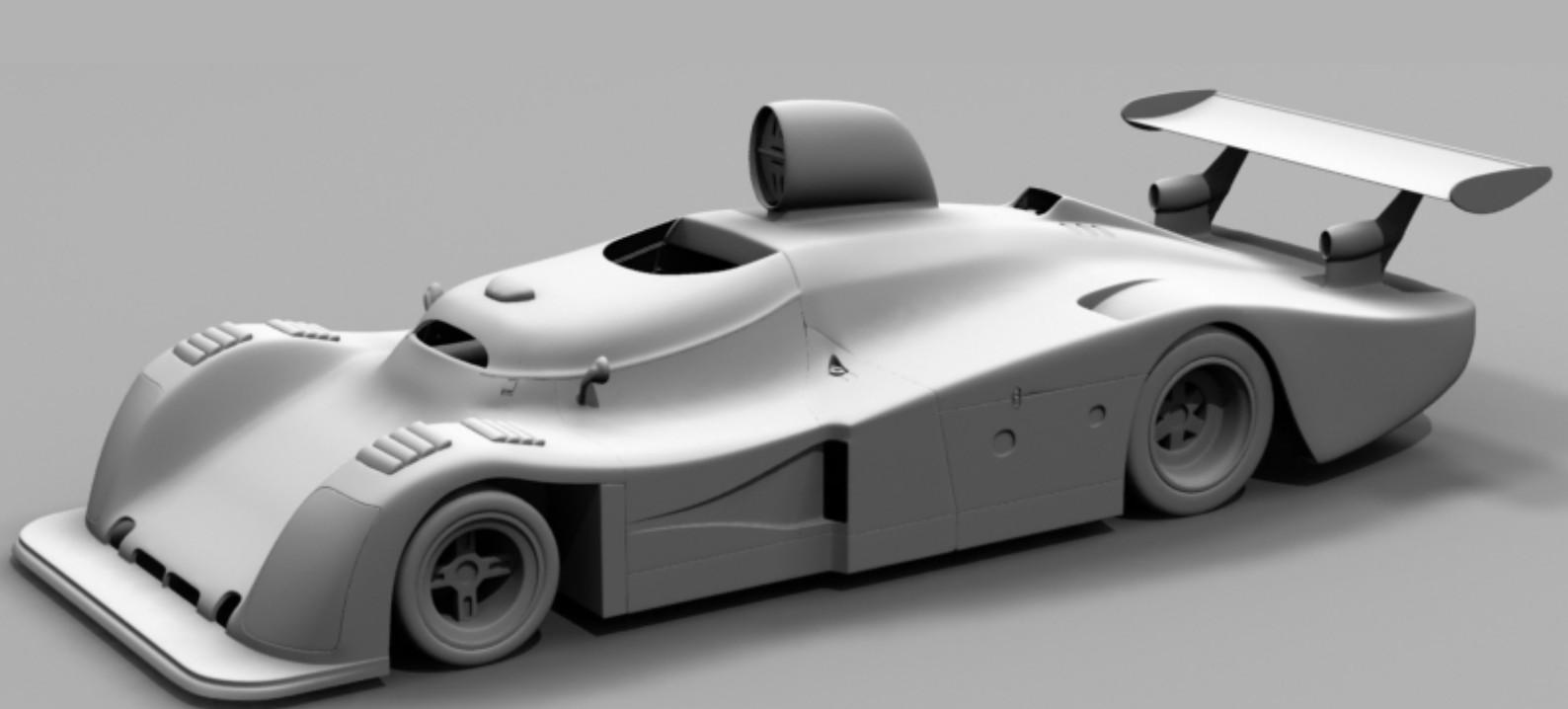
modelling an Alpine A443
by d'Ettorre Olivier-Thomas
part one
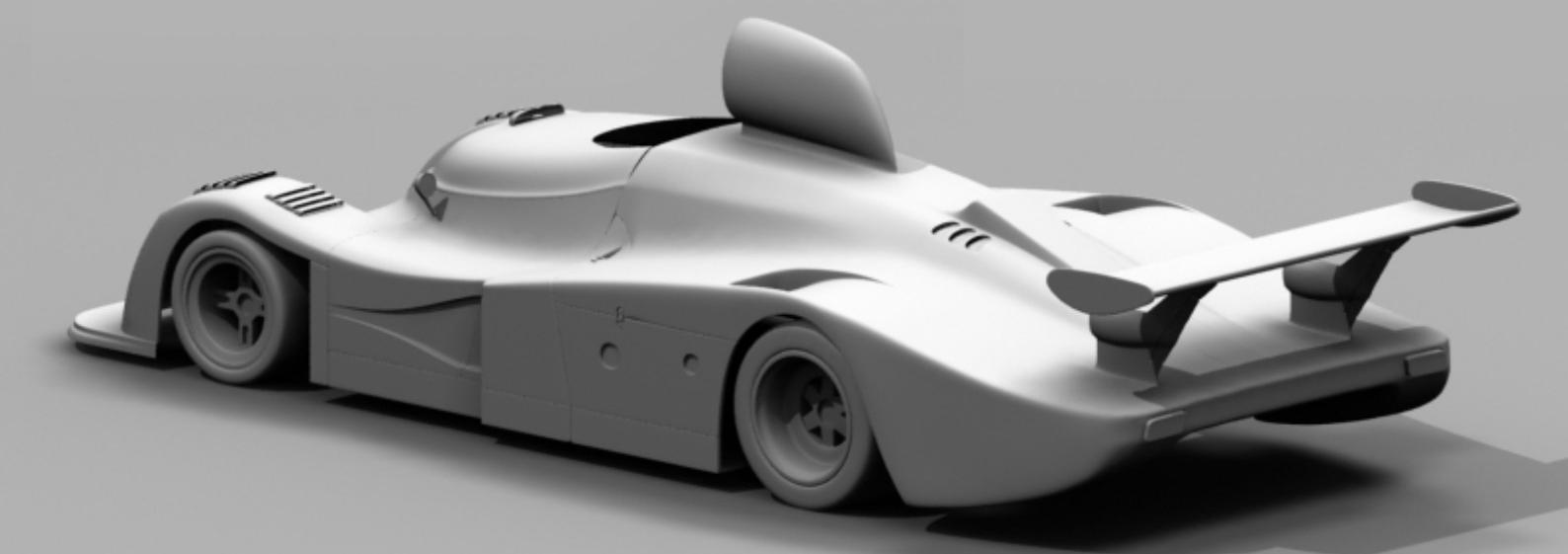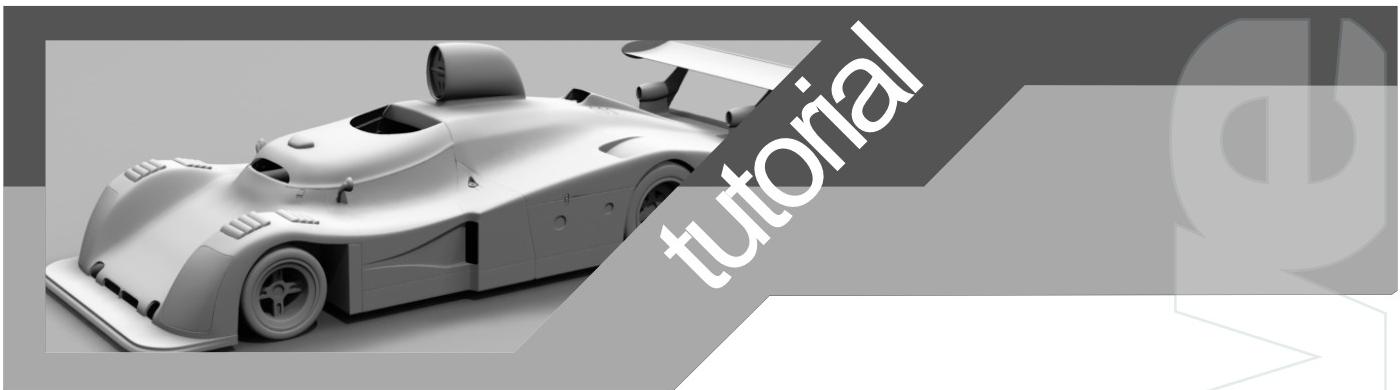
Modelling an Alpine A443 (Part one)

Welcome to the first of this three part tutorial from d'Ettorre Olivier-Thomas on modelling an Alpine A443 Le Mans car.

About this tutorial :

Under each section heading, I have included two rating schemes, a Difficulty rating and an Importance rating. Each will be rated out of 5; 1 being easy and 5 being hard.

VOCABULARY:

When I refer to the following terms, I mean:

Quadripatch: A polygon with 4 vertex (the best)

Pentapatch: A polygon with 5 vertex (average)

Tripatch: A polygon with 3 vertex (the worst) The quadripatch looks the best when smoothed over, so I prefer to use this!

Insert: An editable poly function; add a poly to an existing poly, smoothing all the joins to make it perfectly smooth.

Cutting/tool cut/slice/segmentation/edge loop: Synonym; add an edge to a poly.

Extrude: Extrude function from editable poly for polygons, or "Click & Drag" with an edge.

Meshsmooth: Modify meshsmooth, one or two for the migh, just to see what it's going on. And 2-3 for rendering.

Chamfer: Editable poly function; select an edge & chamfer it to give us two edges.

Deletion: For a polygon - delete from keyboard; for an edge - delete using function from the editable poly panel.

BLUEPRINTS:

DIFFICULTY - 2

IMPORTANCE - 5

First of all, fitting the blueprints, as follows: We have four plans. Make a quick test by adding splines to the top, front, wheel & wings, etc. This will ensure the blueprints look good fro every angle. If not, you can correct, or you will know to correct it when you model it (fig 1).
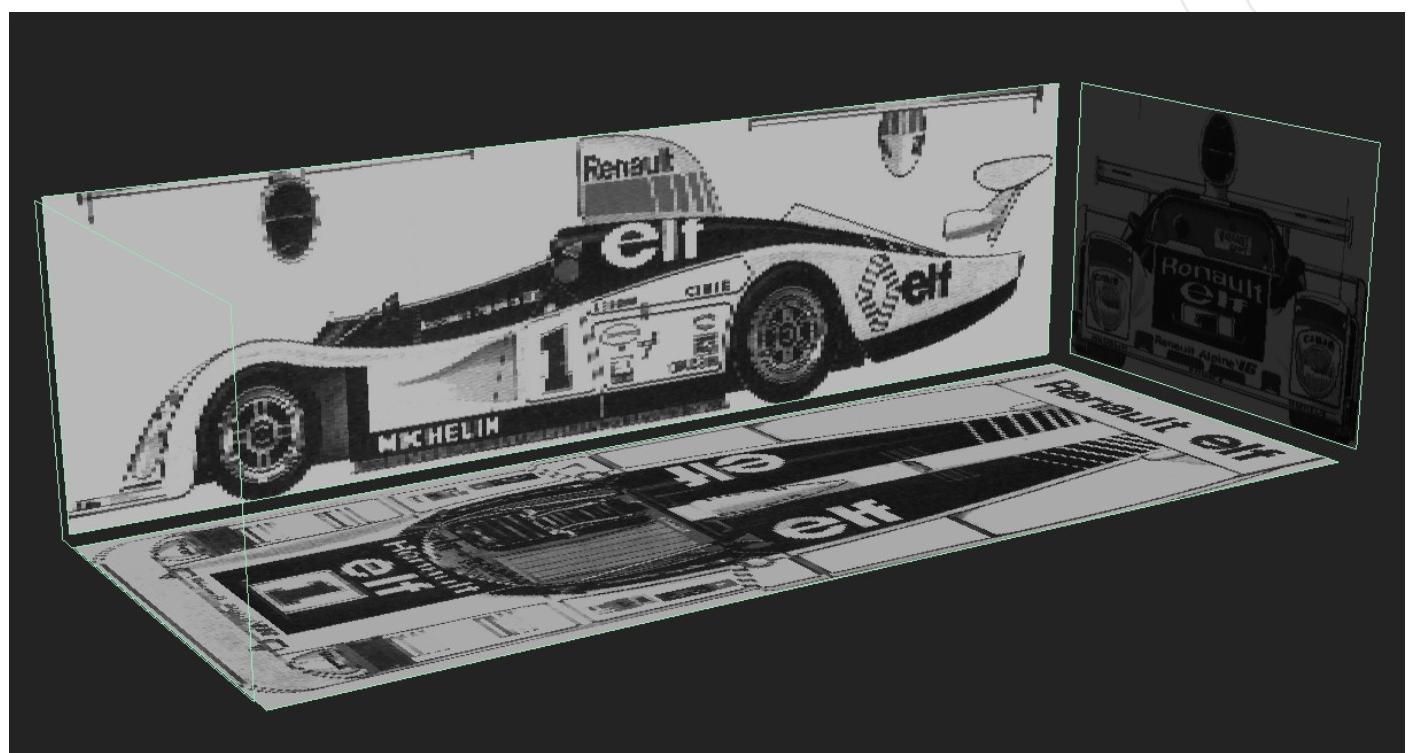
fig 1

FIRST MODELLING:

DIFFICULTY - 1

IMPORTANCE - 3

I start with the basic shape of the car, by converting a rectangular spline into an editable polygon (fig 2), then just dragging and making the border of the front wheel (fig 3). Don't forget to see with a proxy, or the main piece with meshsmooth to check that the curve is smooth enough. Then, just continue extruding from the front to the back of the car (fig 4 & 5).

fig 2

fig 3

fig 4

fig 5

I don't spend alot of time on the details yet, I'm just working on the initial basic shape (fig 6). Including some vertex moves to give me a good overal view of the side (fig 7).
Let's continue with the extrusion. Keep in mind to use only quadripatch!! Then continue with the rear section (fig 8 & 9).....
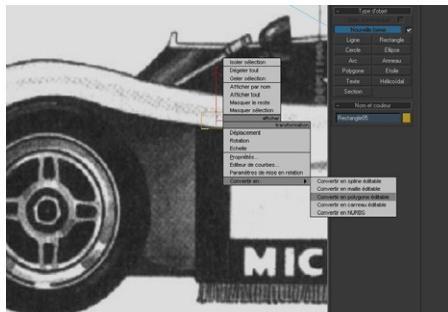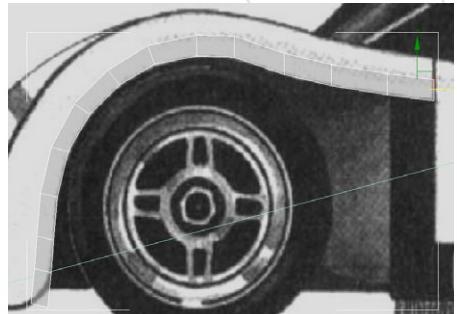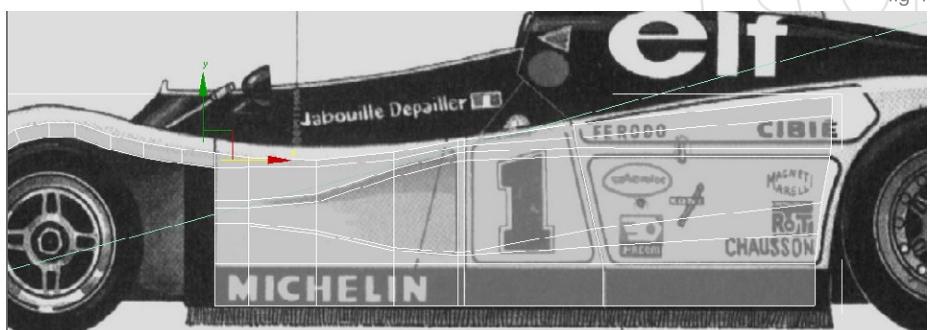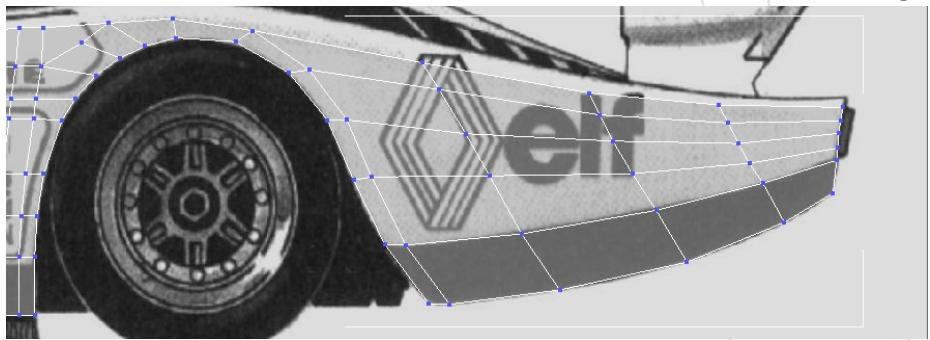
fig 6
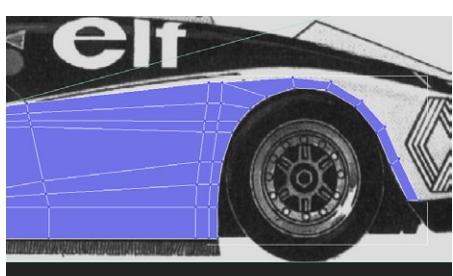
fig 7
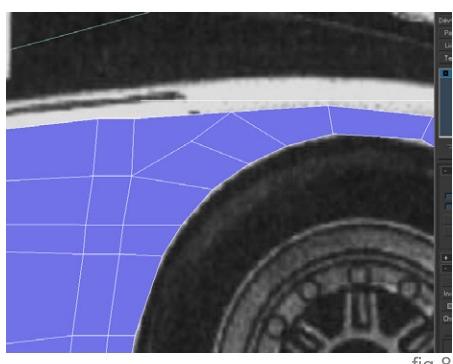
fig 8
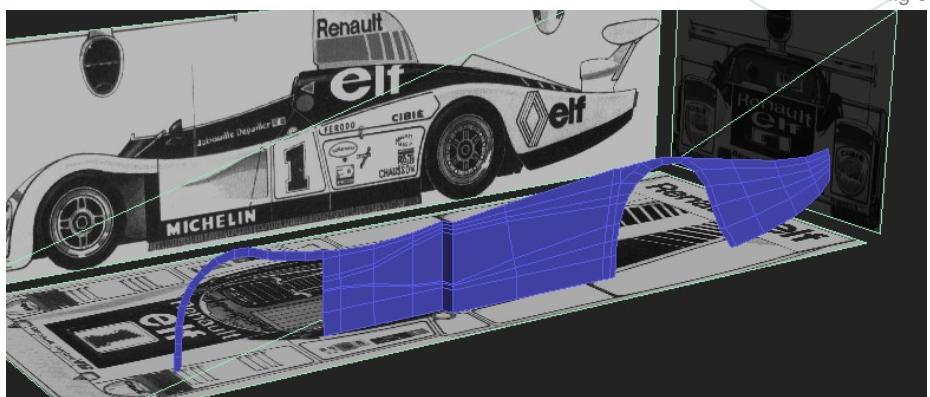
fig 9
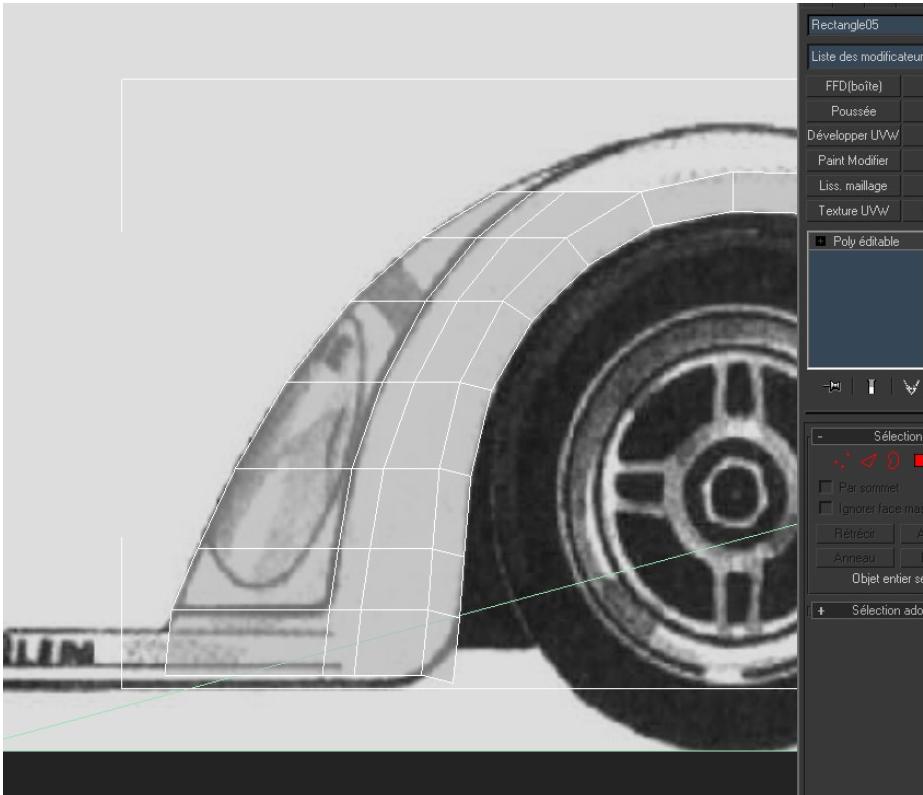
fig 10

FIRST VOLUME:

DIFFICULTY - 3

IMPORTANCE - 3

Now, to make the front part, use the same technique; extrude, making the curve look smooth (fig 10). This is an important part beginning now; in perspective view (and top view) I extrude, to create volume (fig 11). Here, again, check the smoothness of the new curve with meshsmooth (fig 12).

Please note that two of the edges are very close. This is in order for me to have great control, even if I cut the optical glass. Without them, I will have problems smoothing the curve.

So, this is the beginning of 3D. It's time to get busy on the side view (first picture) and on the top view (perspective picture).
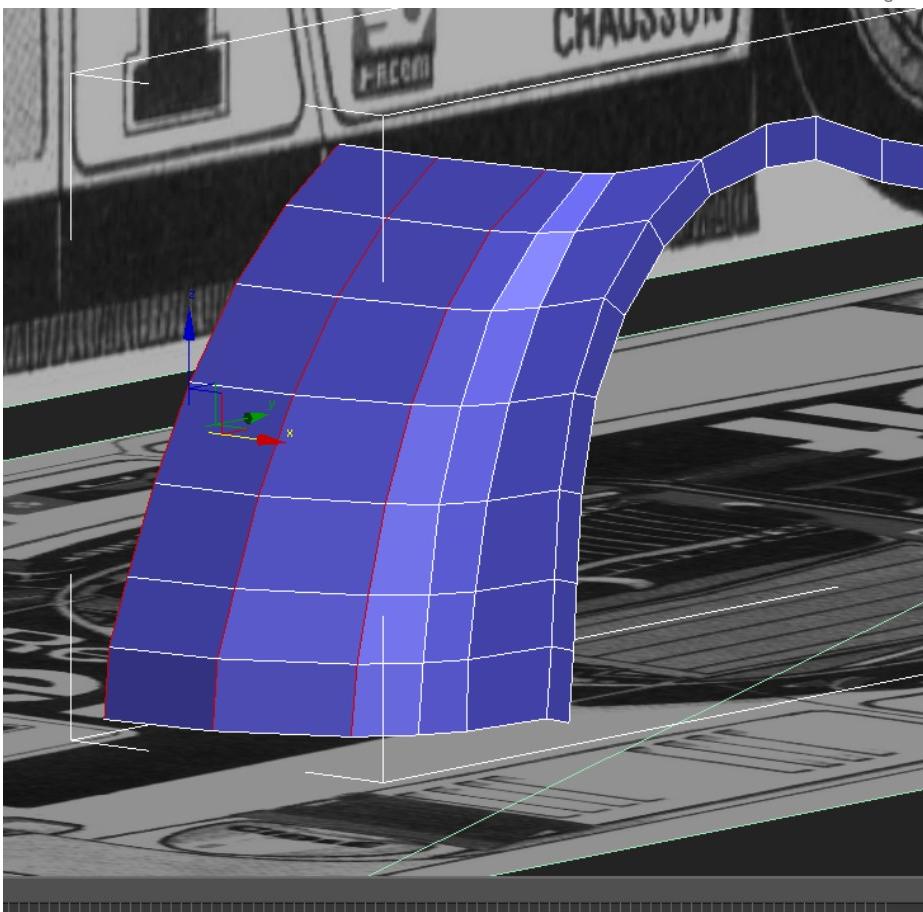
fig 11
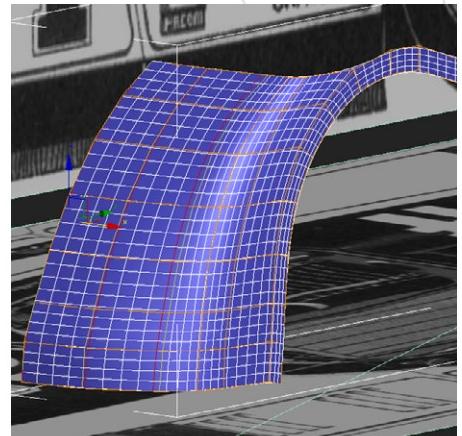
fig 12

FIRST JOIN:

DIFFICULTY - 2

IMPORTANCE - 3

Now, select the middle edge (fig 13) of the side of the car and extrude it from here to the interior (fig 14). Make a good match with the previous extrusion (front of the car. fig 15 & 16). Now, lets extrude to fit the two parts together & weld the vertexes (fig 17 & 18).
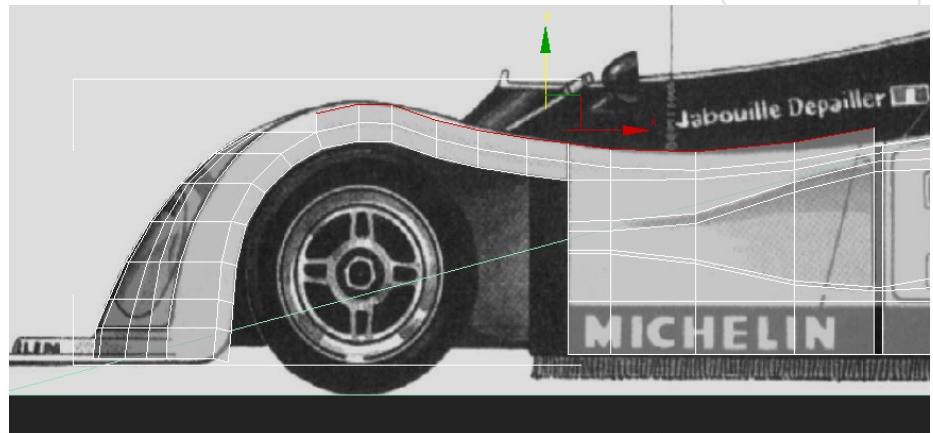
fig 13
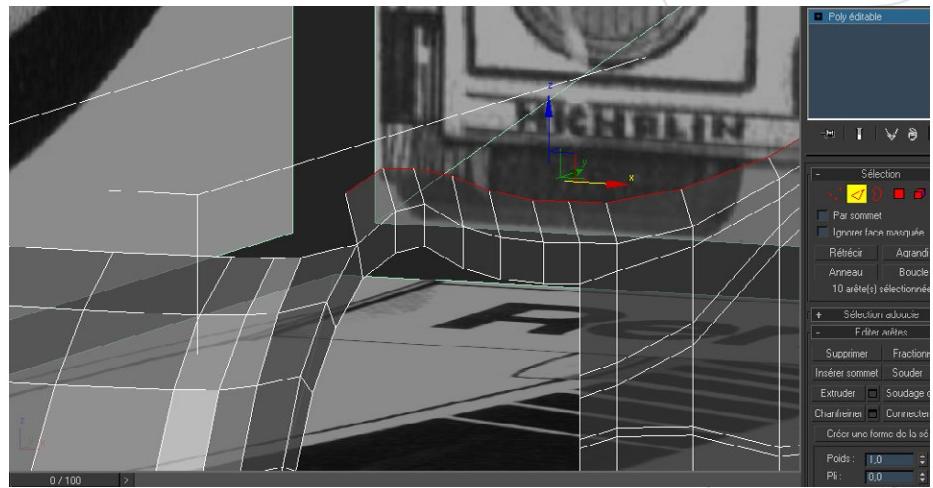
fig 14
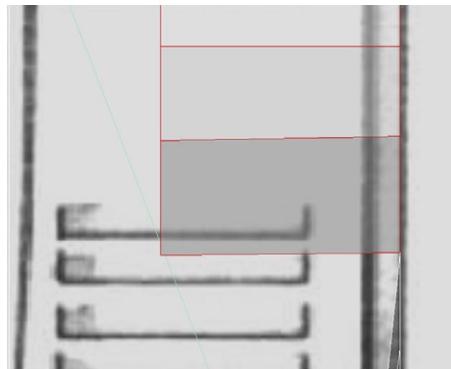
fig 15
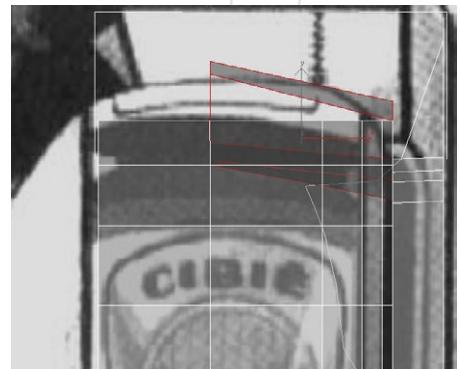
fig 16
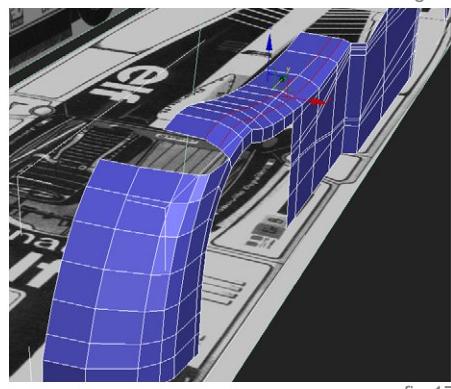
fig 17
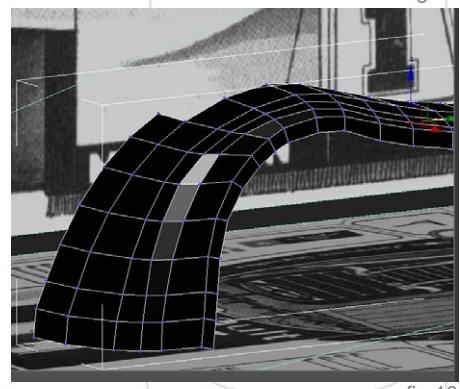
fig 18
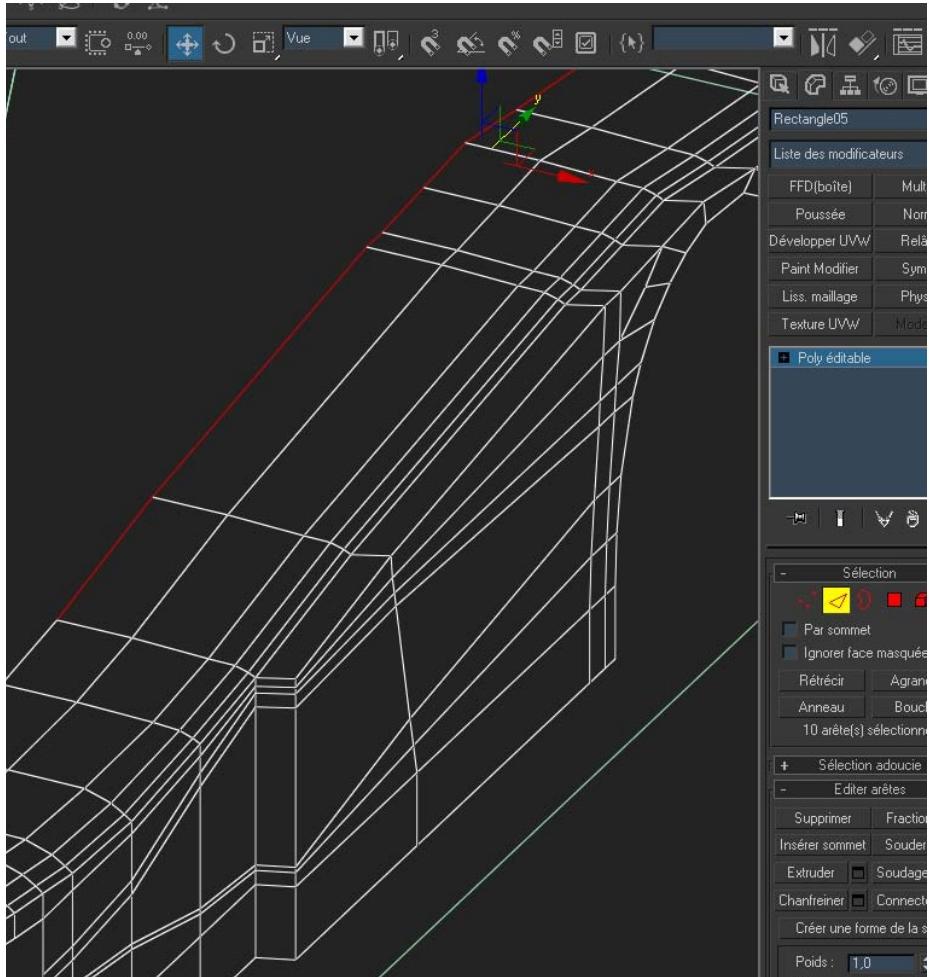
fig 19

I can now finish the extrusion of the middle of the car (fig 19). I begin to work on the angle now, like the small piece that makes the door/air vent, two single cuts and that's all (fig 20)! Put a meshsmooth modifier, to check that the vertex doesn't have to be set higher (fig 21 & 22).

fig 20
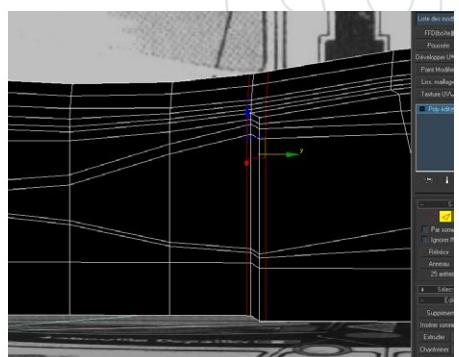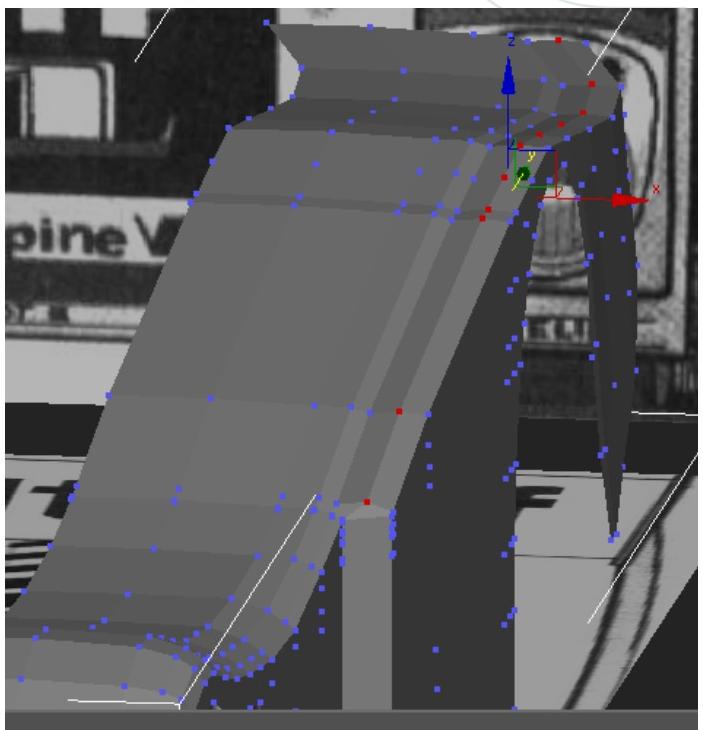
fig 21

fig 22
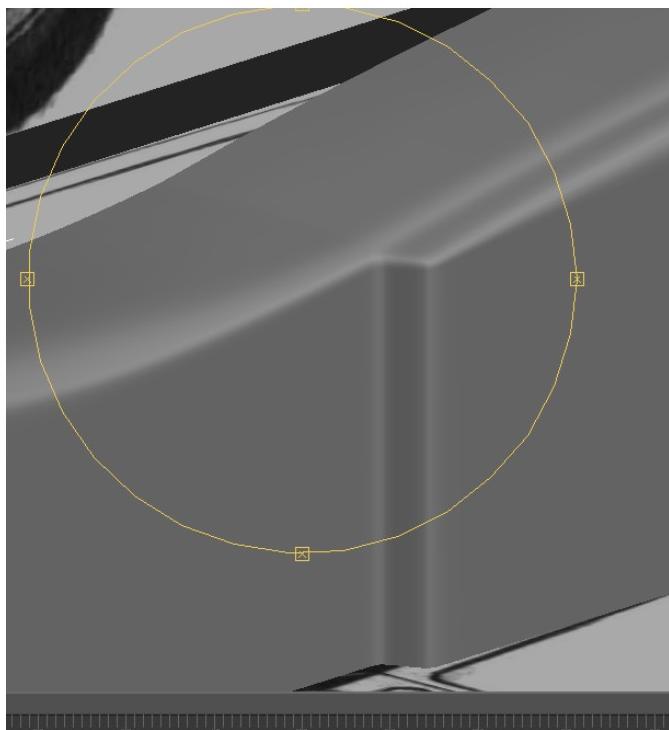
AIR VENT OF THE SUPERIOR PART:

DIFFICULTY - 2

IMPORTANCE - 2

Now, make some extrusions to fit the tail of the car, and fit the vertex with the blueprint (fig 23). Select polys on the top of the air vent (top view, fig 24), insert a negative extrudsion and adjust vertex (fig 25), checking the meshsmooth mesh (fig 26).
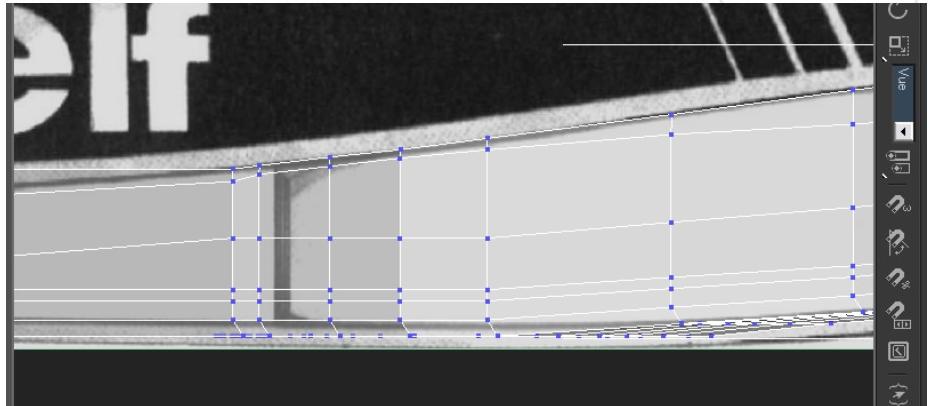
fig 23
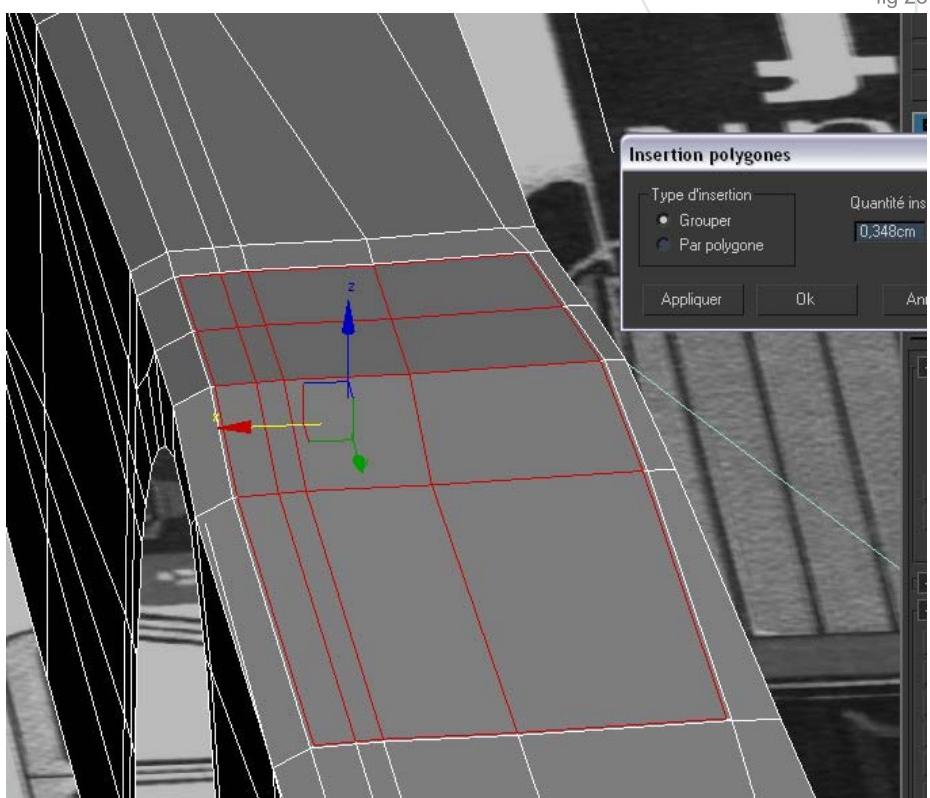
fig 24
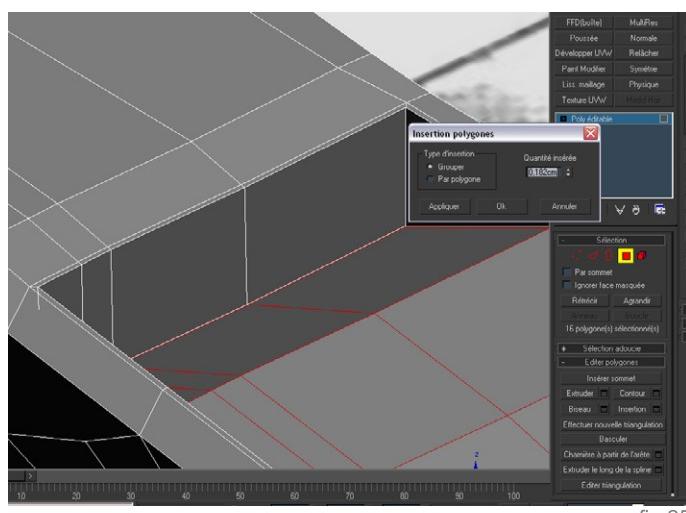
fig 25
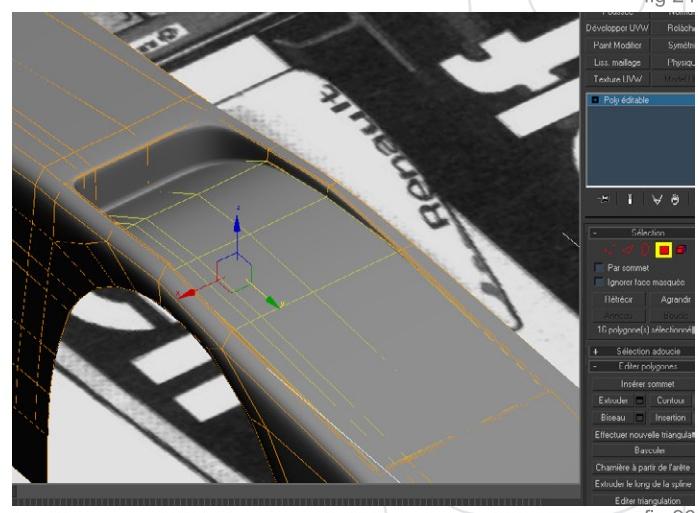
fig 26
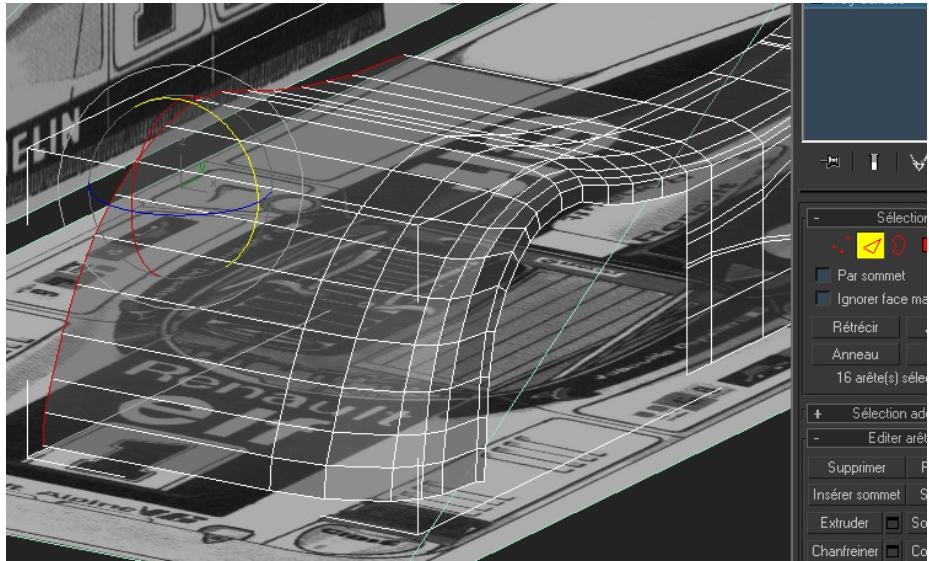
fig 27

FRONT OF THE CAR:

DIFFICULTY - 5

IMPORTANCE - 4

Now, return to the front of the car and extrude the edge from here to the median edge, to prepare for the symmetry (fig 27, 28 & 29).

fig 28

fig 29
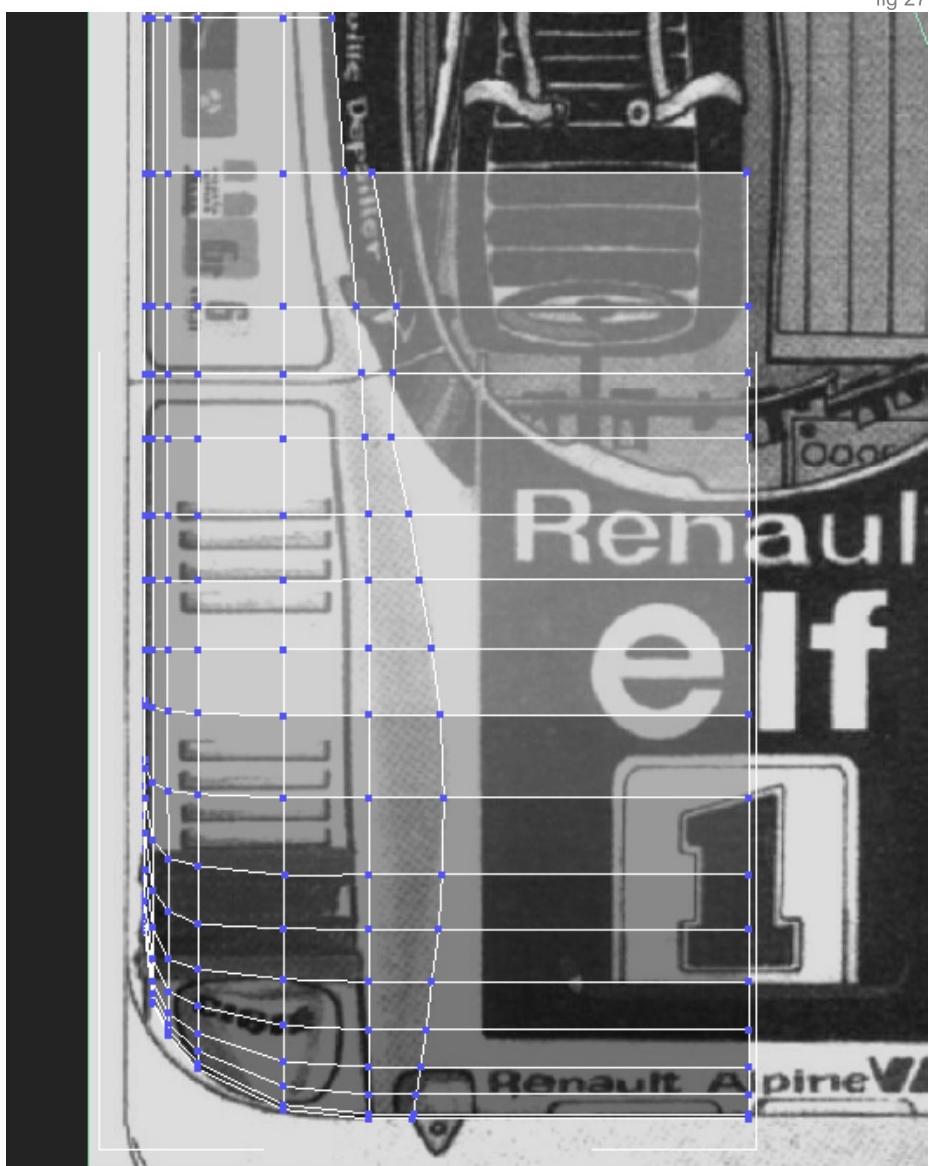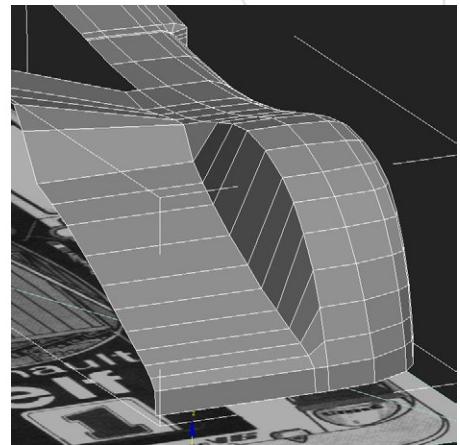
Now make a chamfer of the edge, to sharpen the angle (fig 30). Take a look at the other parts too for the future air vent near the floor. For this you need to just make two new chamfers and cuttings to get two parrallel edges (fig 31, 32 & 33). To finish, just chamfer around the mouth of the air vent, again to sharp it (fig 34 & 35).
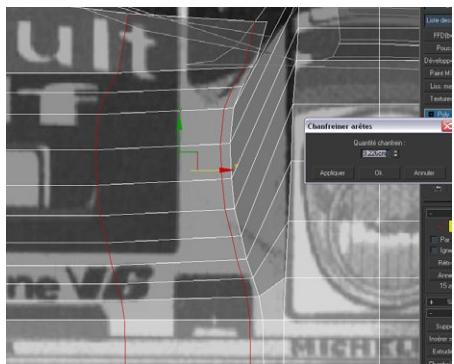
fig 31
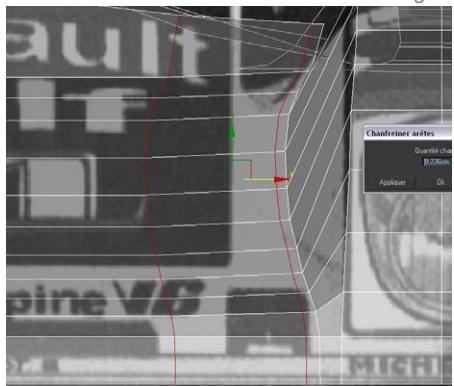
fig 32
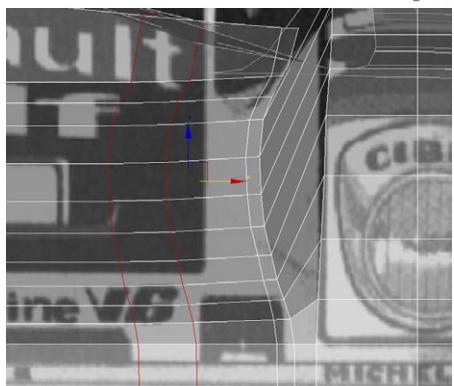
fig 33
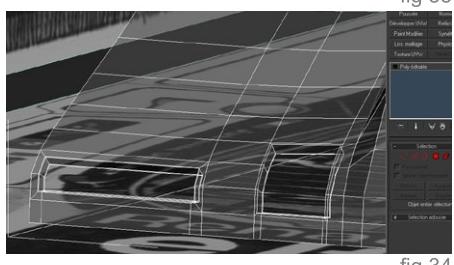
fig 34
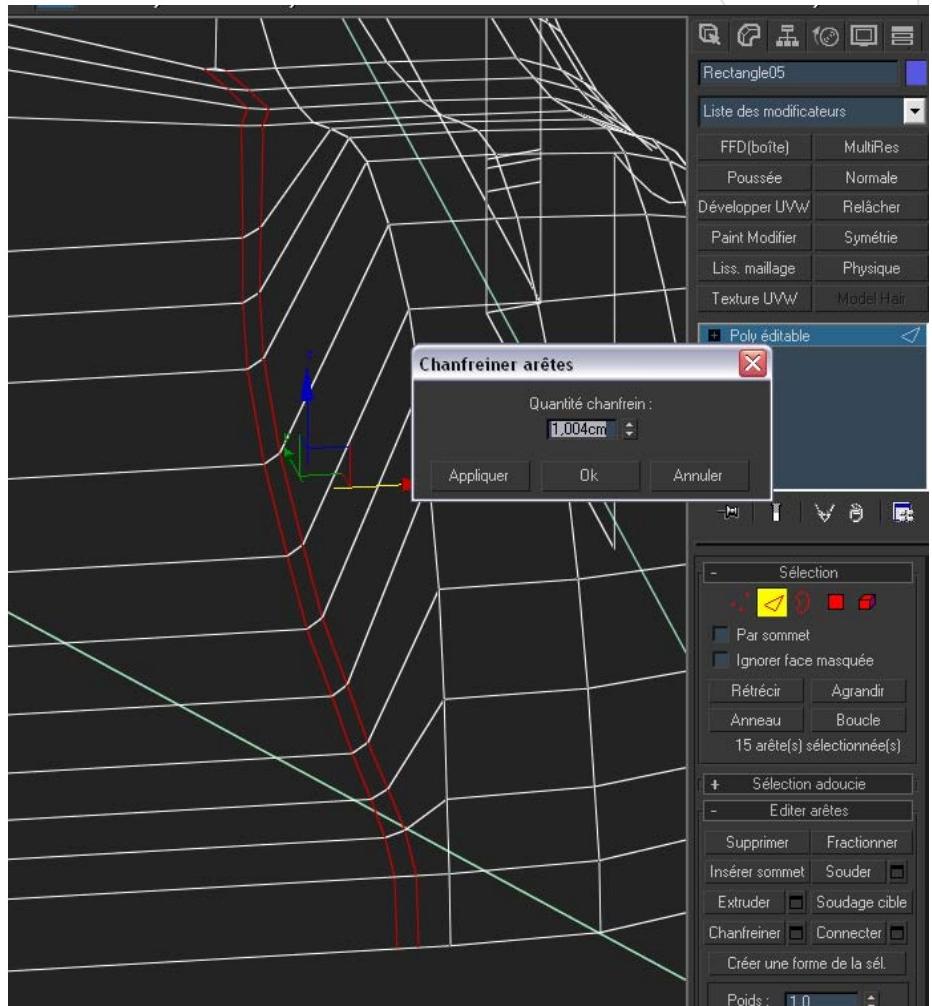
fig 30
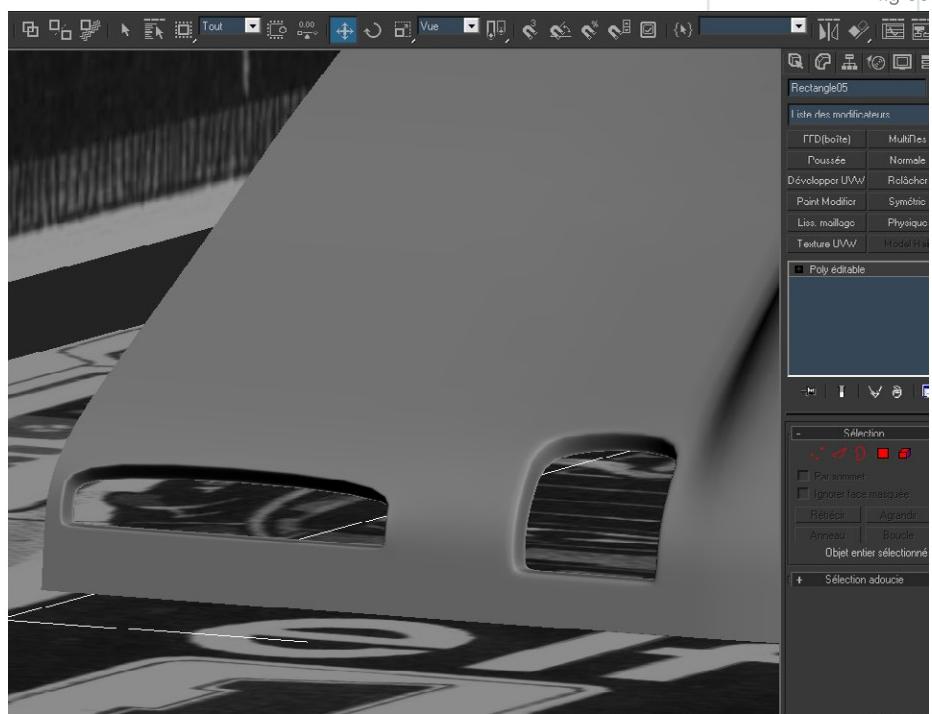
fig 35
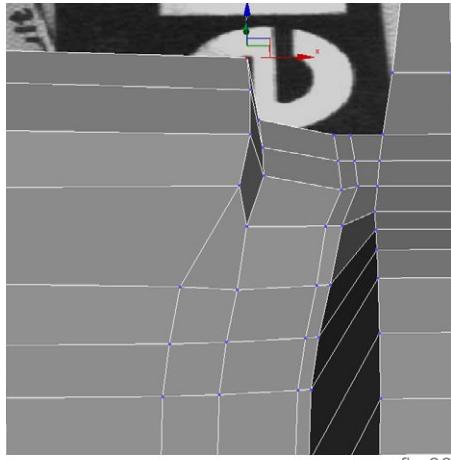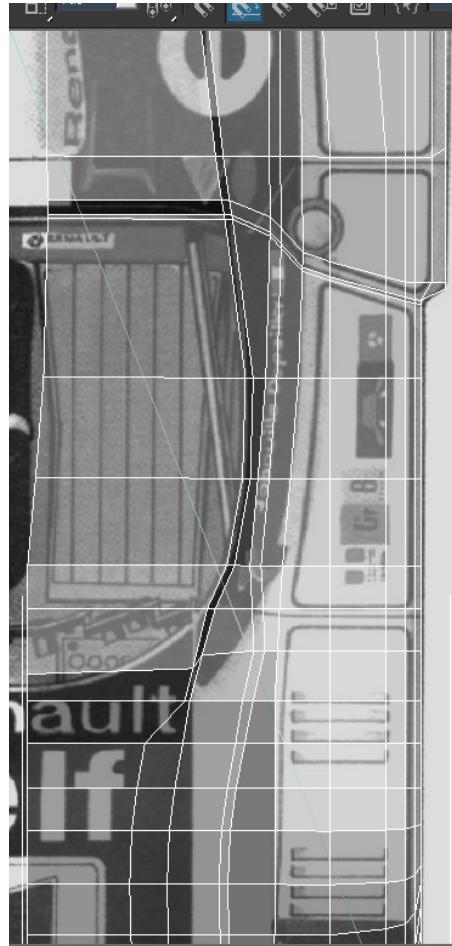
fig 36

fig 37

fig 38

fig 39

Ok, now, the cockpit (the interior part).

Cap the hole, harmonise shapes, and make all needed modification now (fig 36 - 41).
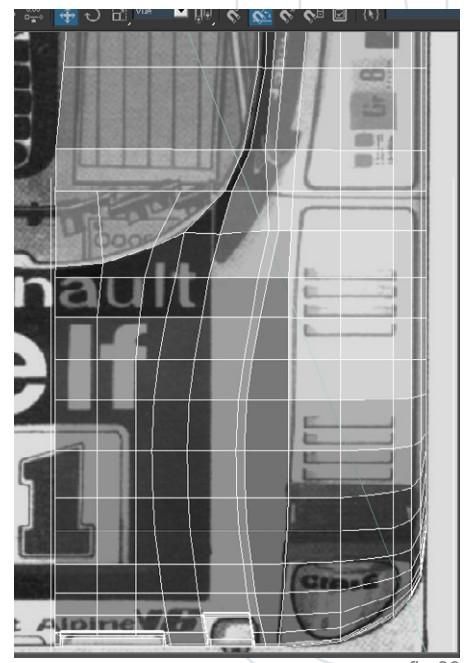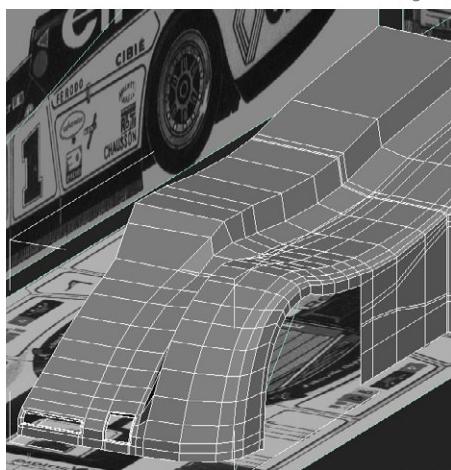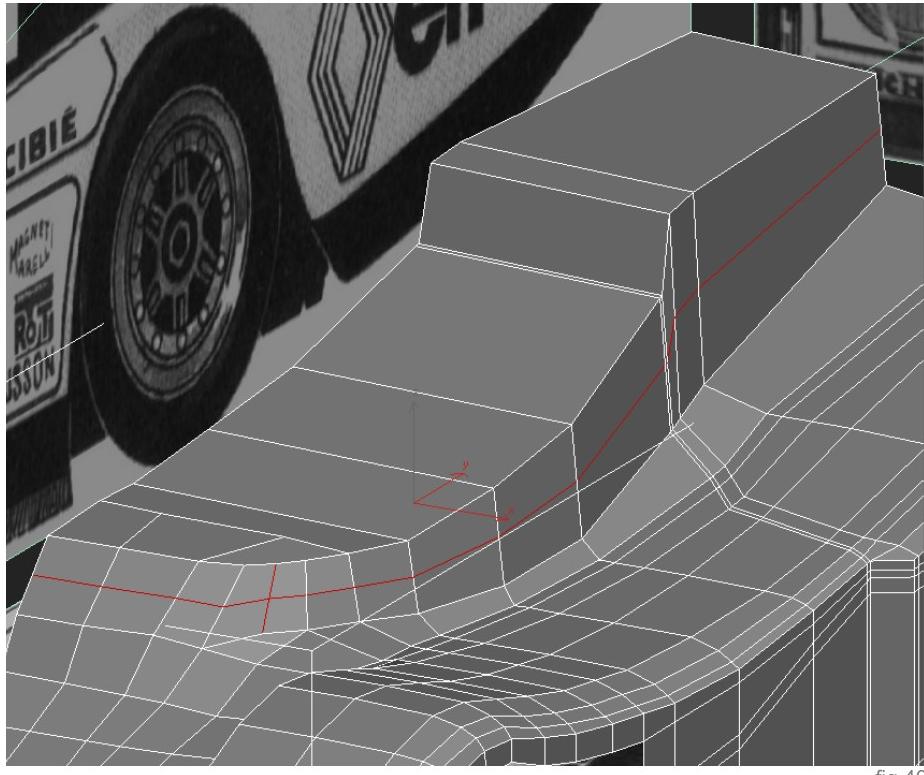
fig 40
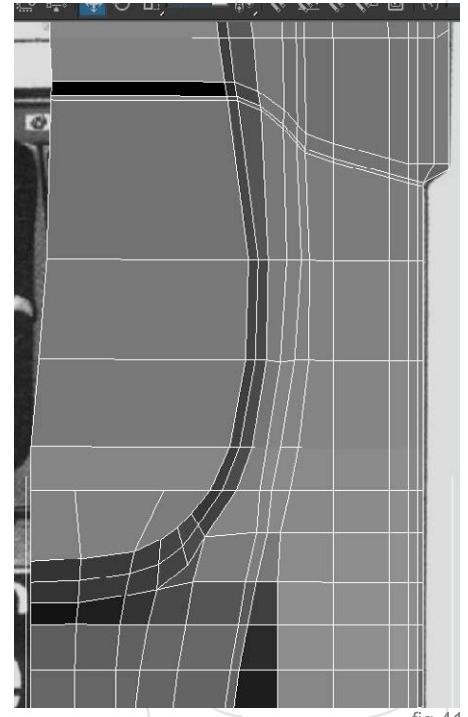
fig 41
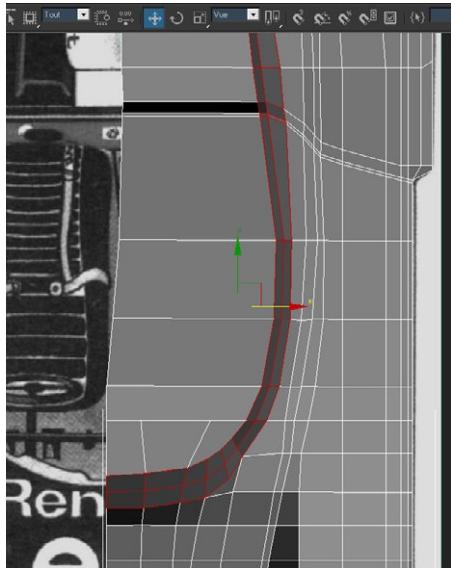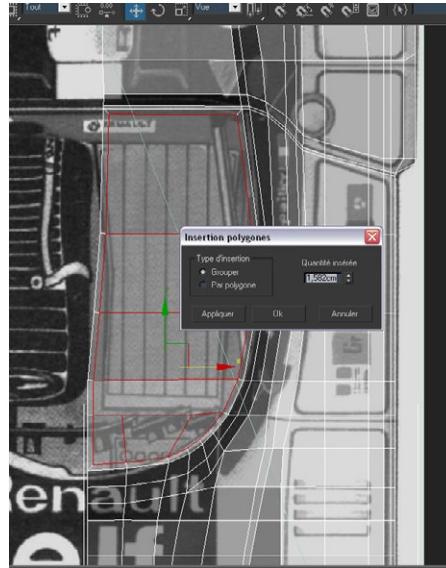
fig 42

fig 43
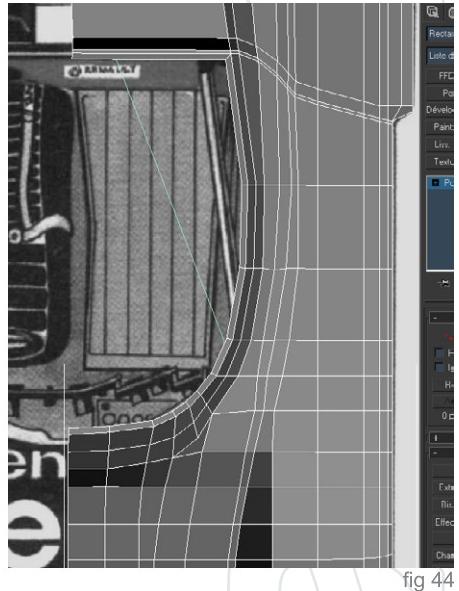
fig 44

For the border (fig 42); insert, extrude (fig 43), delete polys (fig 44)... Adjust the rear part of the bubble (fig 45) - a single cut will be enough for now (fig 46)!
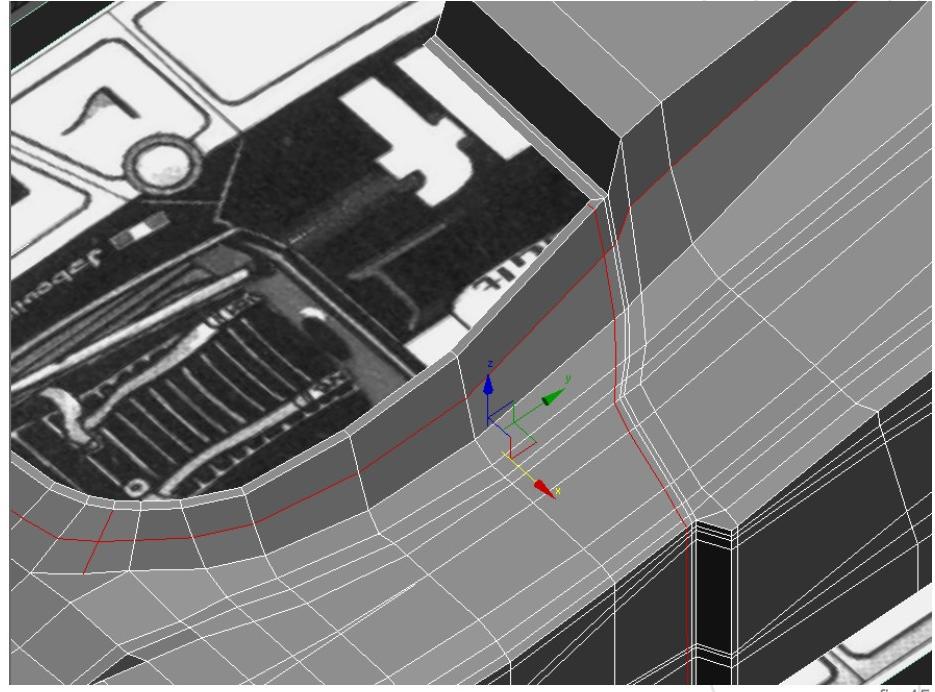
fig 45
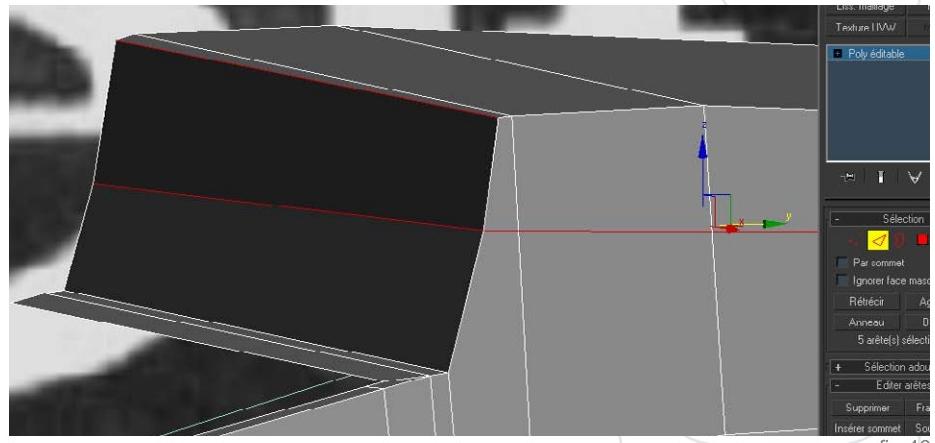
fig 46

fig 47

fig 48
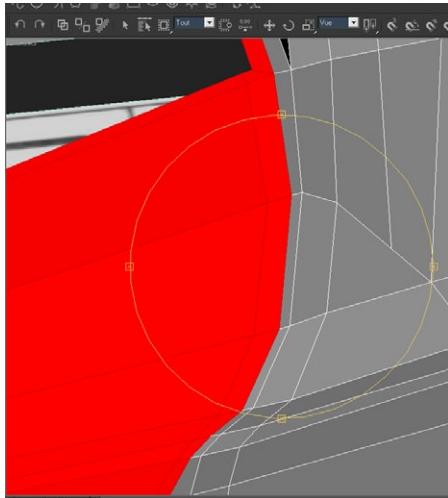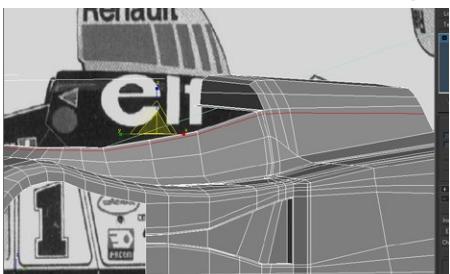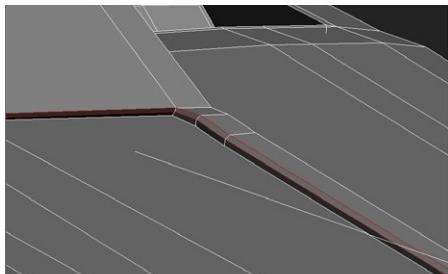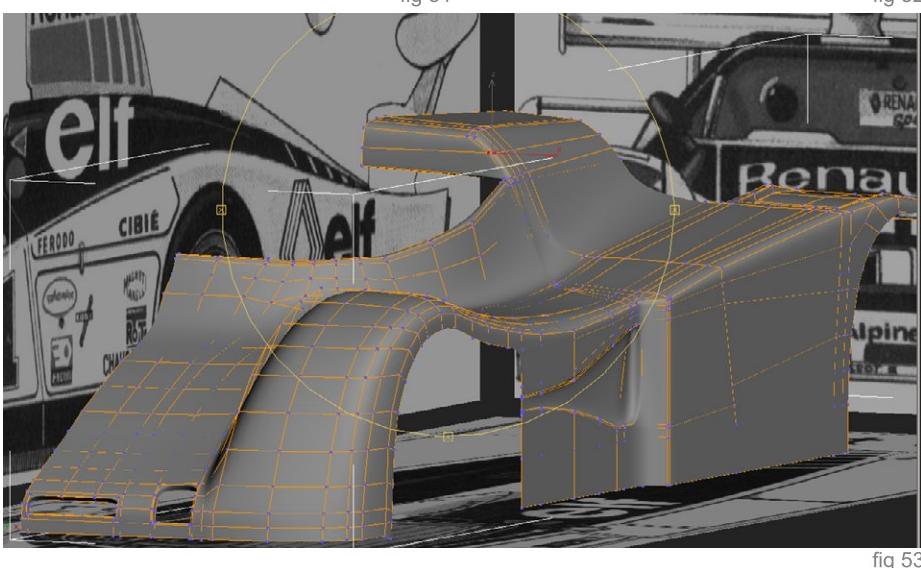
FIRST DETACHMENT:

DIFFICULTY - 2

IMPORTANCE - 4

Continue with the detachment simply add an edge to make it smooth (fig 47 - 53).

fig 49

fig 50

fig 51

fig 52

fig 53
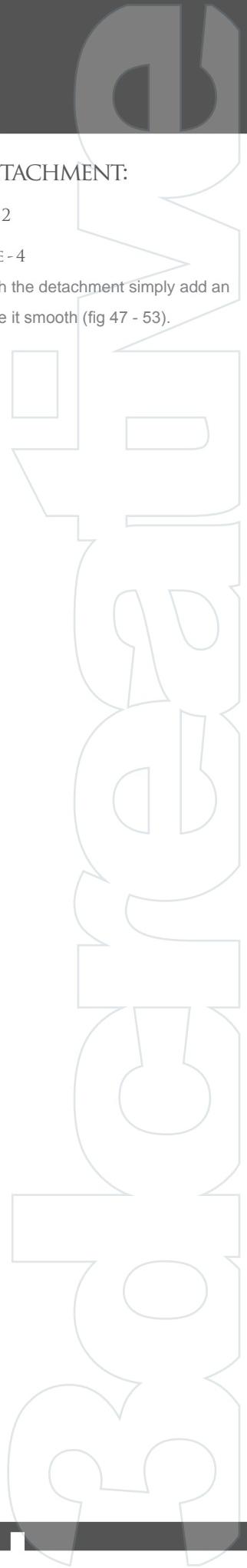
EXTERNAL PART:

DIFFICULTY - 2

IMPORTANCE - 2

For the engine's large air vent. I begin, as for the first part of the modelling of the car, with a single rectangular spline editable poly (fig 54 - 58).
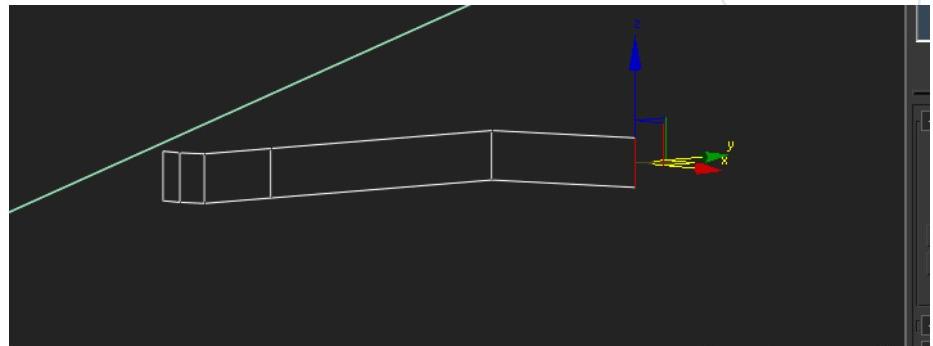
fig 54
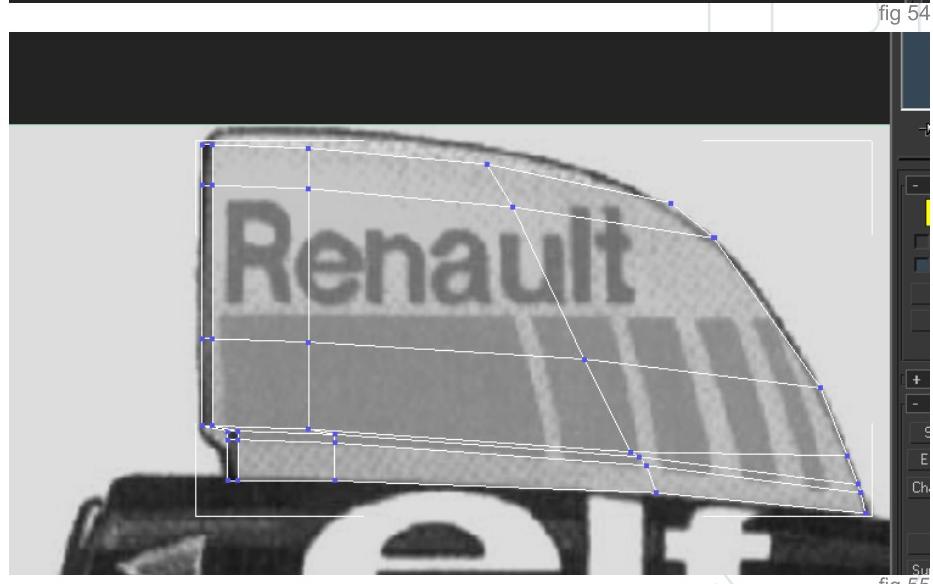
fig 55
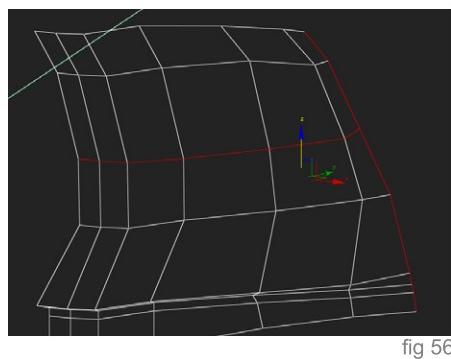
fig 56
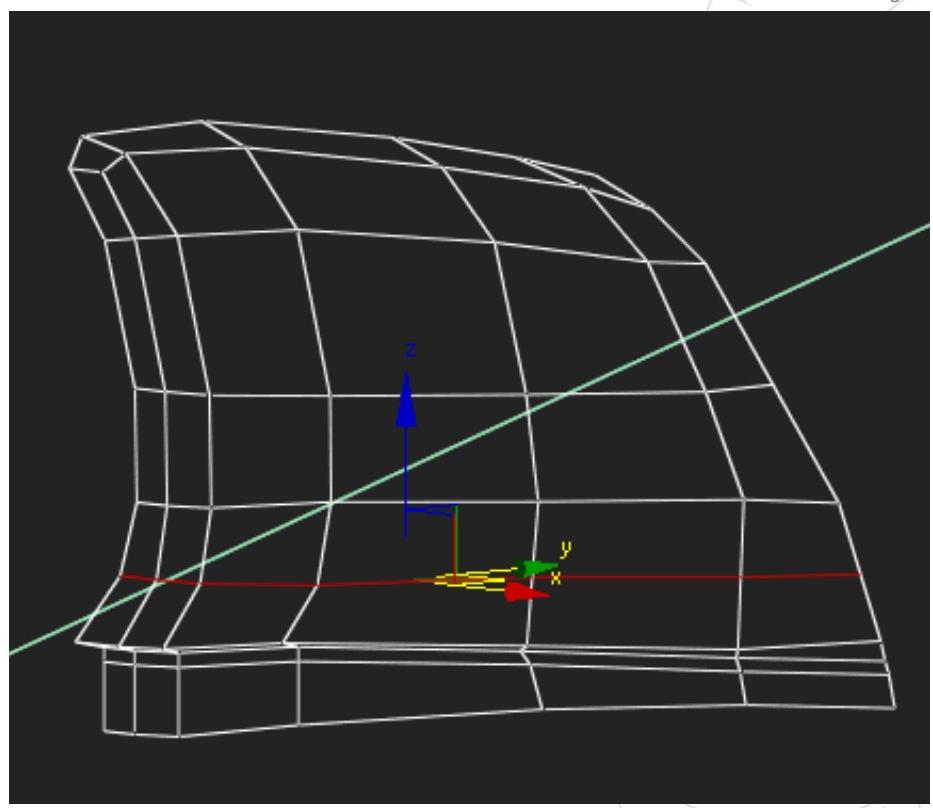
fig 57

fig 58
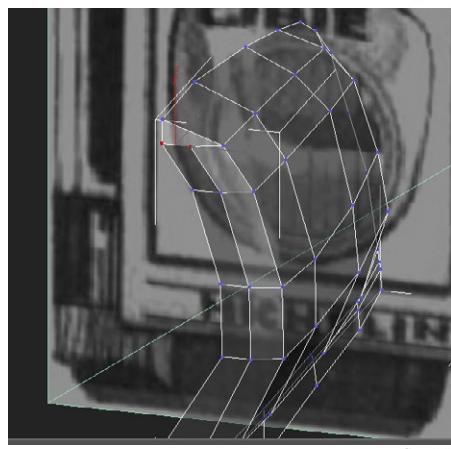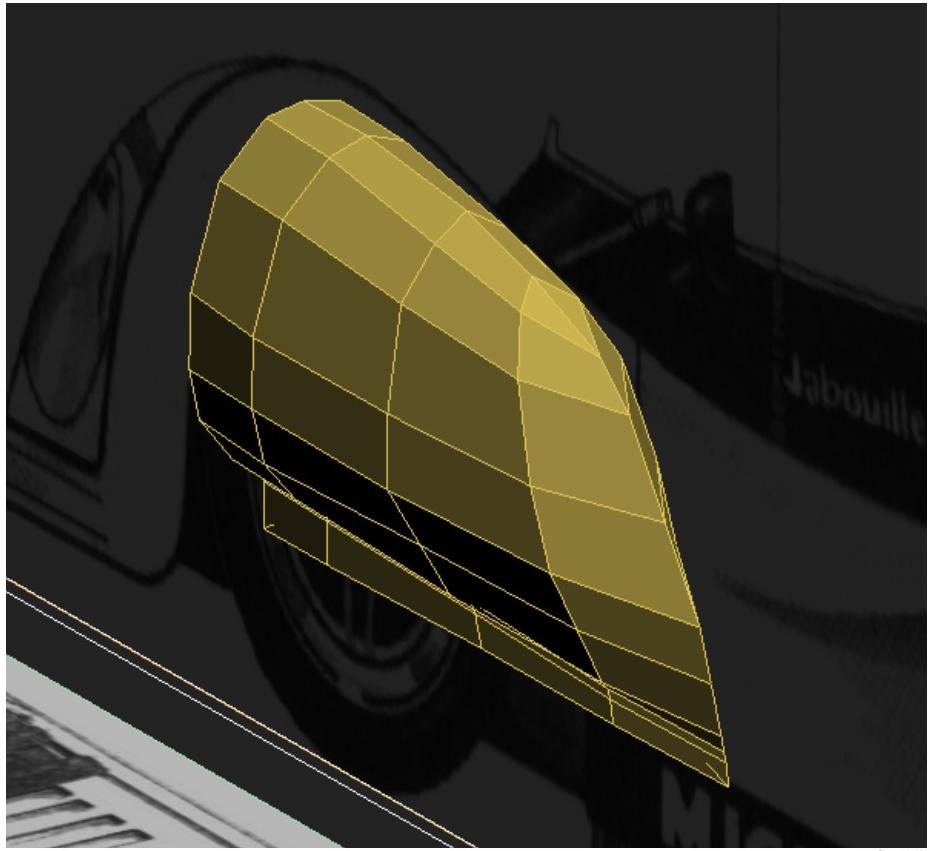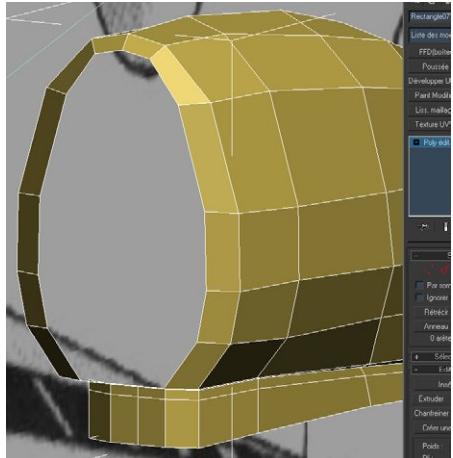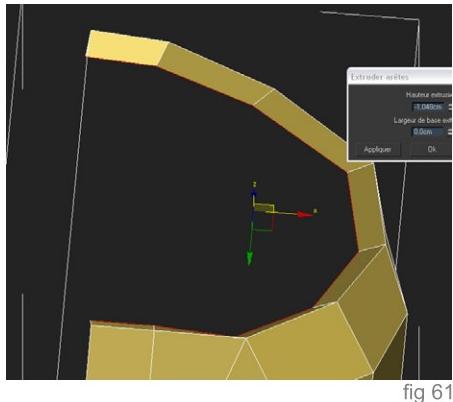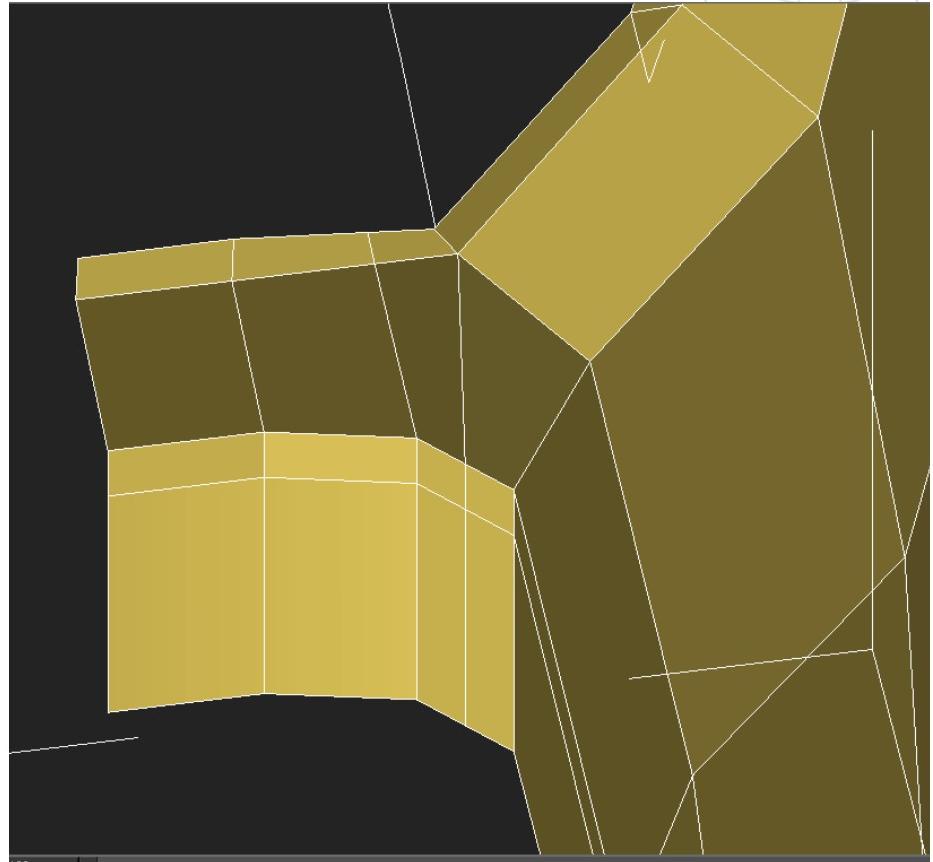
Then, I start to add edge loops to give a nearly finished form (fig 59), and symmetry, (with the symmetry modifier), and then collapse the editable poly (fig 60). Now, delete the symmetry and, you'll have the vertex exactly on the median plane now (fig 61).

Now you can adjust the shape, and begin the internal insertions (to make it smooth) (fig 62) .

fig 59

fig 60

fig 61

fig 62

JOIN IT ON THE CAR:

DIFFICULTY - 4

IMPORTANCE - 4

Now, I make the insertion of the air vent (fig 63), using multi edge loops, by selecting the poly that it will be on. Again, edge cut to obtain a quadripatch only (fig 64).

Simply attach the two pieces together, then, make an insert on the lower part. Make some edge loops again to harmonise and to keep only the quadripatch again (fig 65). For example, in the front, the small angle is a tripatch, so, delete the central edge and delay the cut edge, now, you get your quadripatch (fig 66 & 67)!

This technique is very helpful. You have to know/posses it, and use it again!
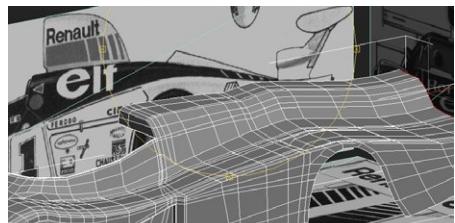
fig 63

fig 64
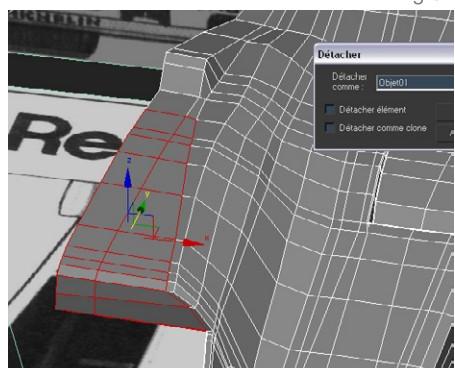
fig 65
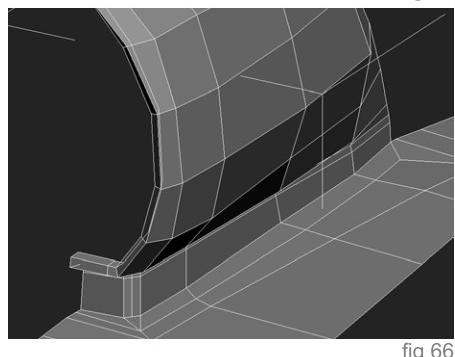
fig 66
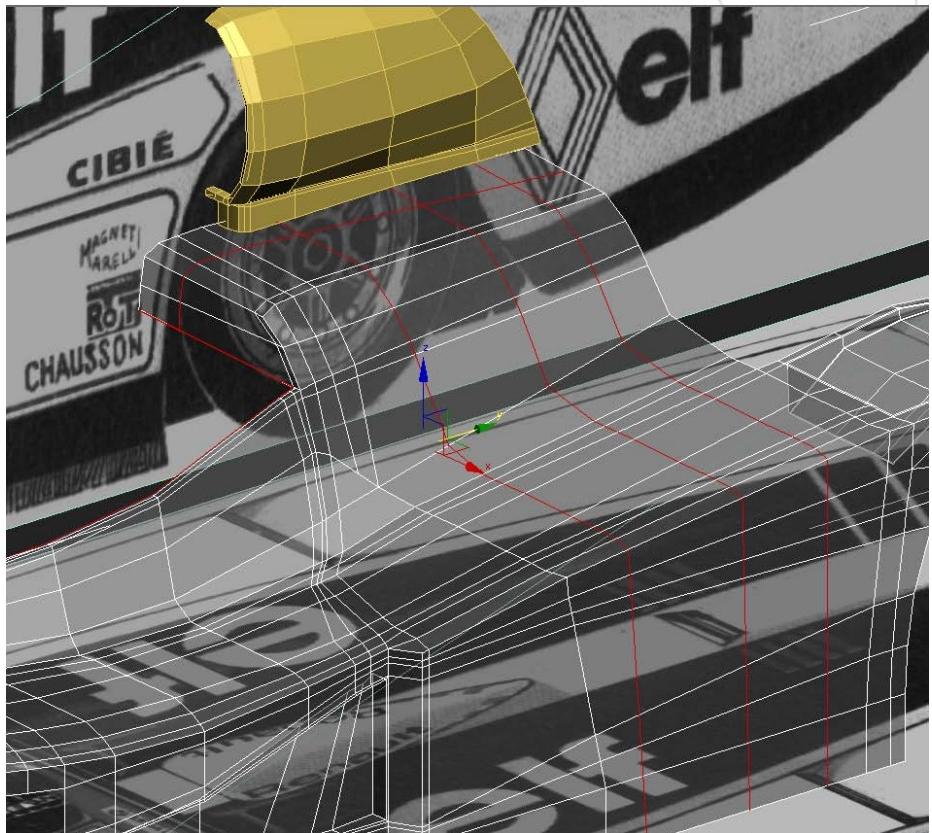
fig 67
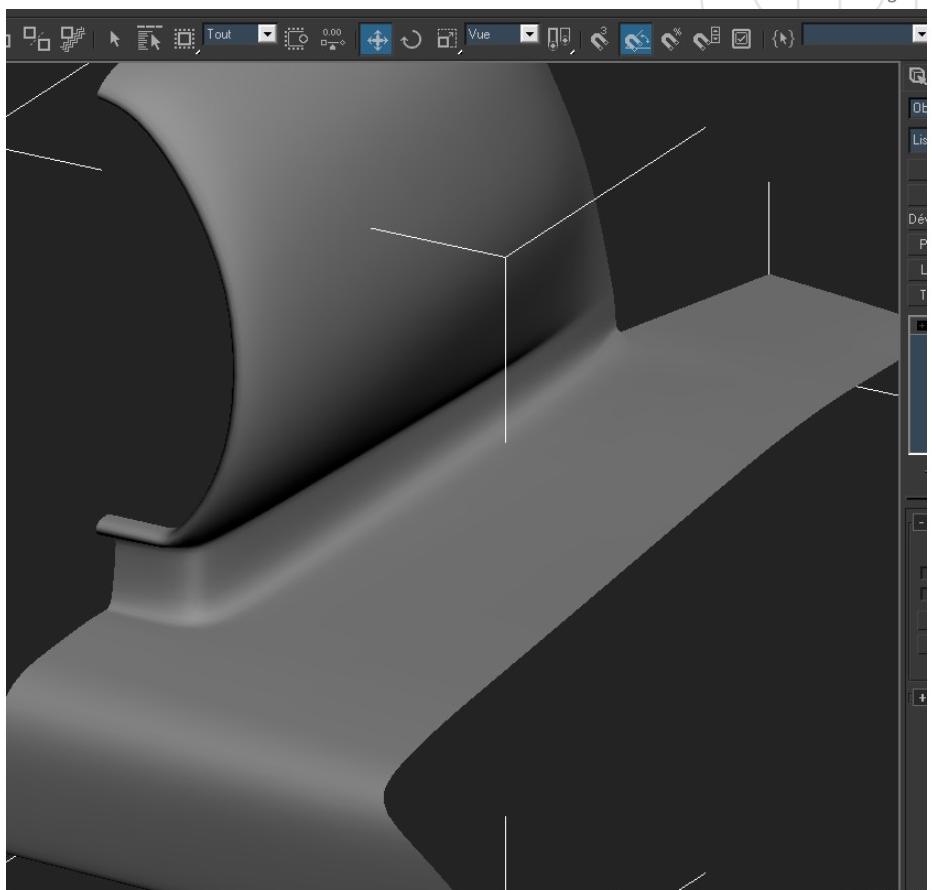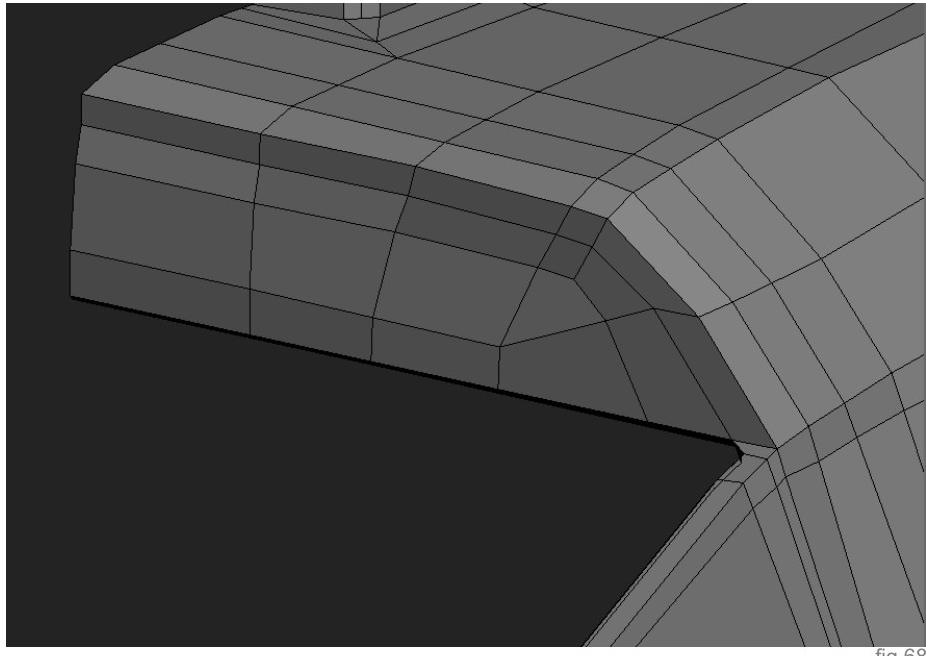
I am constantly modifying the front of the bubble, in order to get the perfect smoothness (fig 68).

fig 68
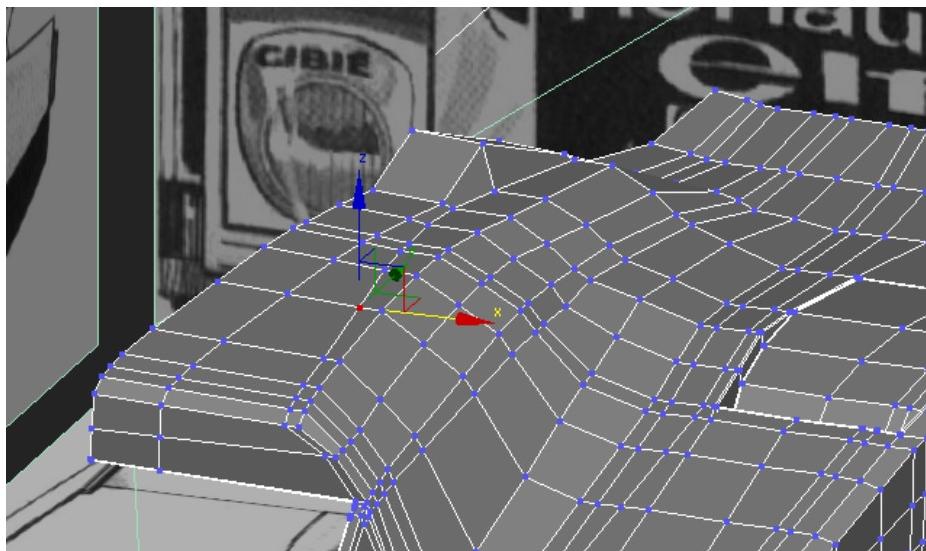
Now go to the air vent, on the other side of the car. Recut the main shape (fig 69 - 71).

fig 69
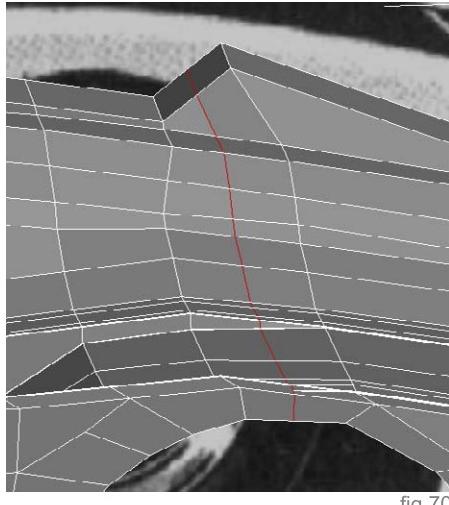
fig 70
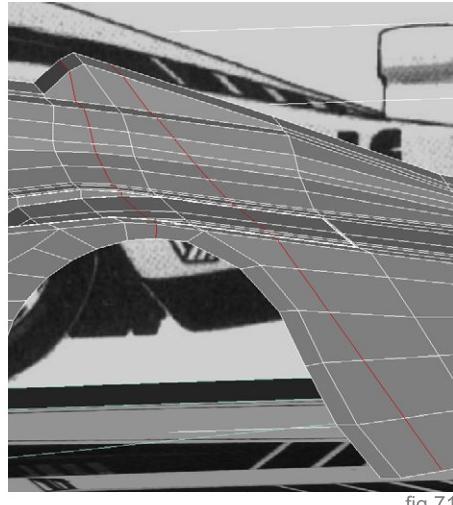
fig 71
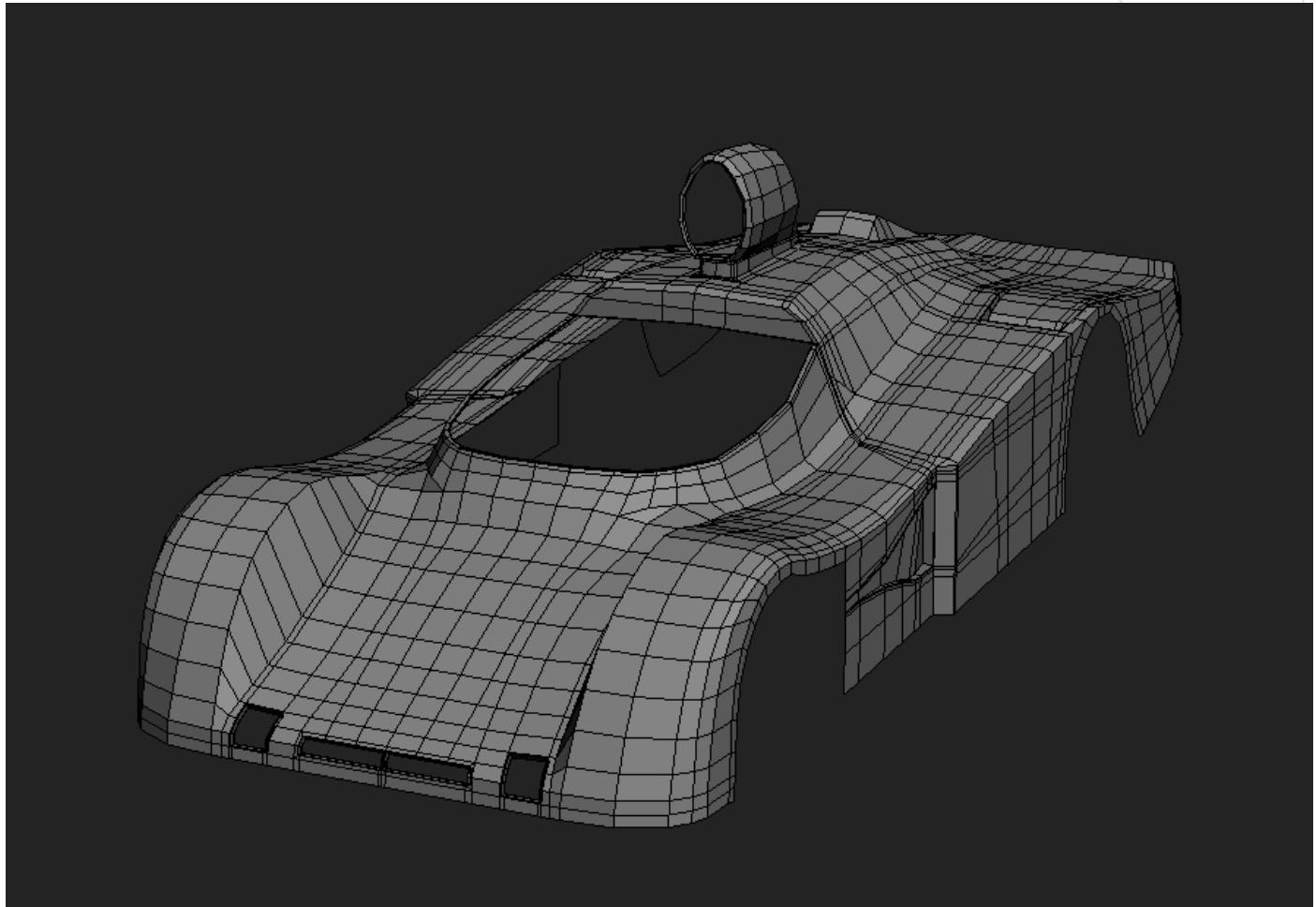
fig 72

After this, I have ended up with this (fig 72)!

Don't miss part 2 of this tutorial in the next

months issue of 3DCreative Magazine.

Tutorial By :

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threeintwo

"..I have chosen a photo that I took myself when I was on holiday in Italy. I will use this photo because it doesn't contain a direct light source (in this case the sun); it has a nice diffused light that we can easily match to the techniques...." Read on as Neil Maccormack talks us through the techniques involved when bringing together 2d environments with 3d objects

integrating 3d objects into 2d environments
by neil maccormack

threeintwo
integrating 3d objects into 2d environments

To begin, I have chosen a photo that I took myself when I was on holiday in Italy. I will use this photo because it doesn't contain a direct light source (in this case the sun); it has a nice diffused light that we can easily match to the techniques I will demonstrate and doesn't need complicated 3D geometry to get good results! In future tutorials, we will look at different lighting scenarios and more complicated images, but for now its important we start with the basic principals…

Step 1
Set the image to be your background in LW layout

In your display options set 'camera view background' to 'background image' (fig 01). Set the image as your background by selecting it in the "effects" window (fig 1.5). Set your camera height and width dimensions to be the same as the background image you are using; in this case my image measures 1280 x 850. You can use the image editor window to get this information if you don't already know it (fig 02)
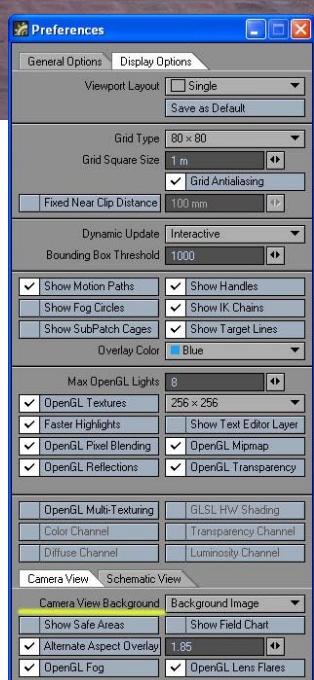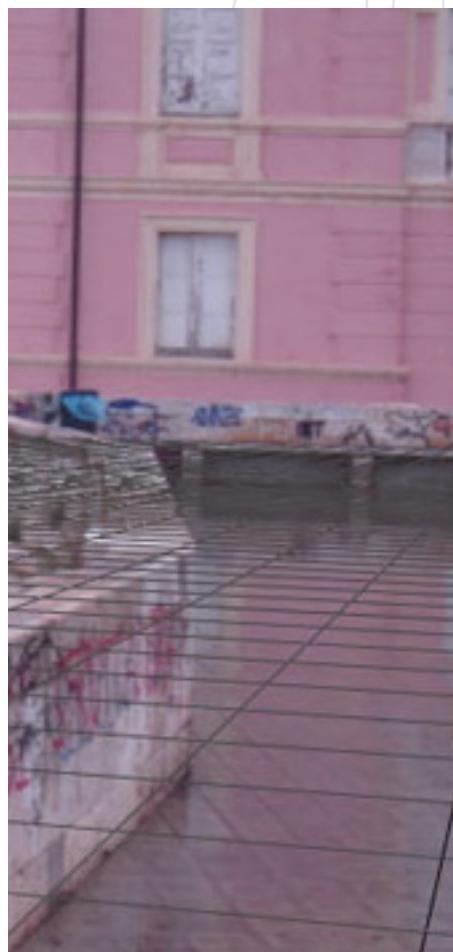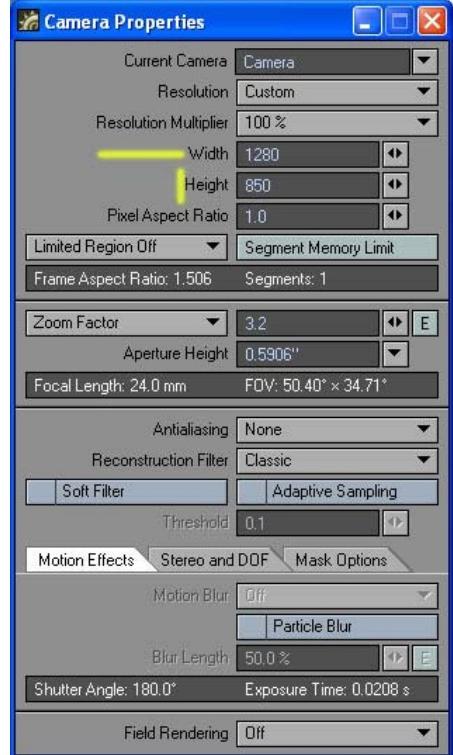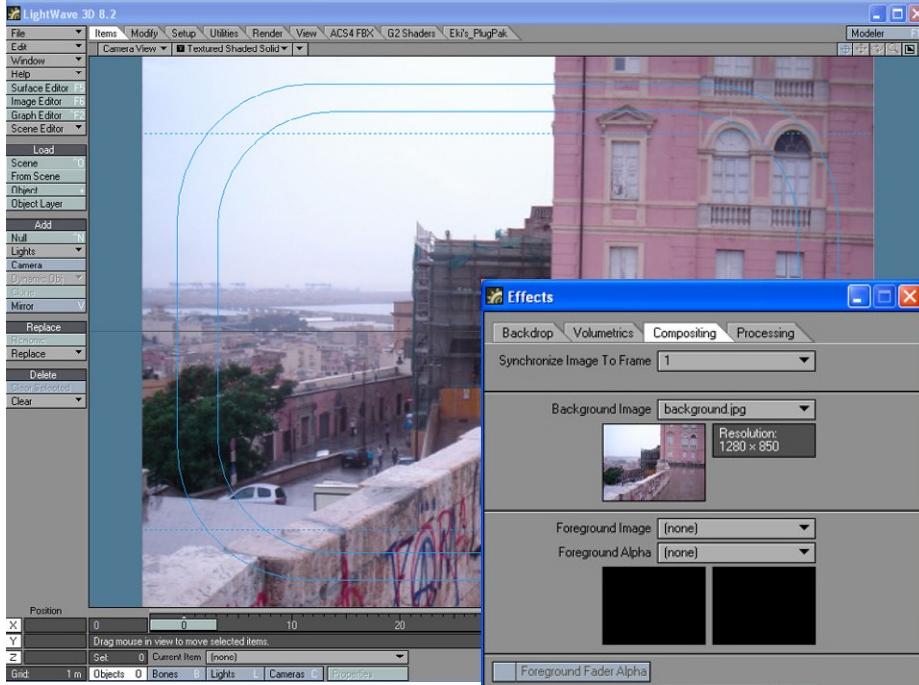
STEP 2
ADJUST CAMERA ROTATION AND POSITION TO MATCH THAT OF THE IMAGE

Using your layout Grid as a guide, try to line the elements in your background image with the lines of the grid in the "camera view" window. Try to keep to real world measures; my grid is set to 1m and my camera is positioned in such a way so that the things I judge to be 1 metre away in the image are 1 grid square away in LW (fig 03).
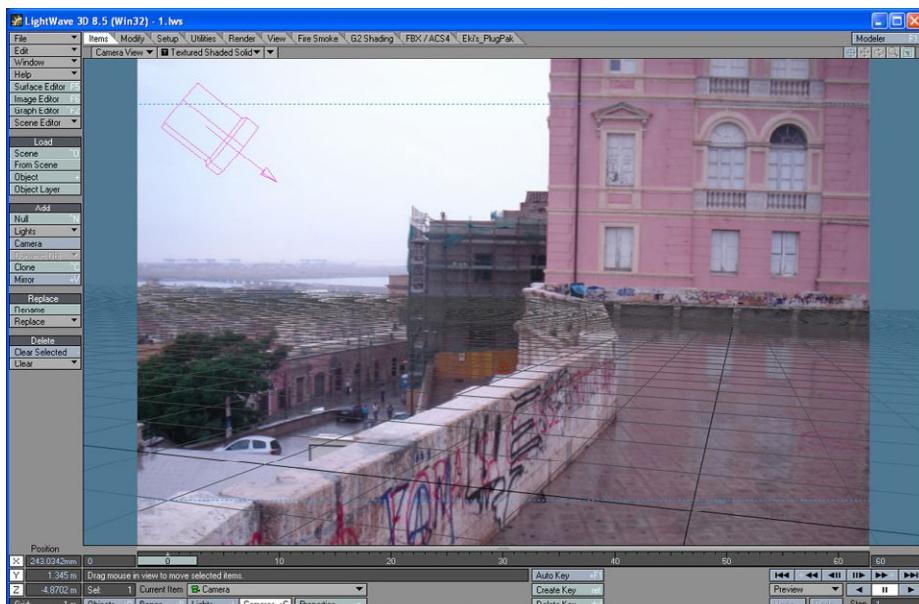
Step 3
Adding geometry to the scene and surfacing the ground plane

For this project, I will be adding a simple primitive object onto the right side of the image. In order to achieve the level of realism I am looking for, I need to add a ground plane which will catch the shadow of my object. I made a simple 1 poly ground plane and brought this into my scene. It was then rotated and moved and aligned with my camera grid lines to match the existing elements in the photo (fig 04). In order to match the surfacing of the ground plane to that of our photo we need to use a technique called 'front projection mapping'. This will allow whatever part of our image that the ground plane covers to be displayed on it's surface, enabling seamless integration of the 2 elements. In order to do this, open your surface editor and choose the colour channel of the ground object and set the layer to 'image map', the projection to 'front' and the image to your background image (fig 05). Render out a frame and you can see we are already close to what we want (fig 06).
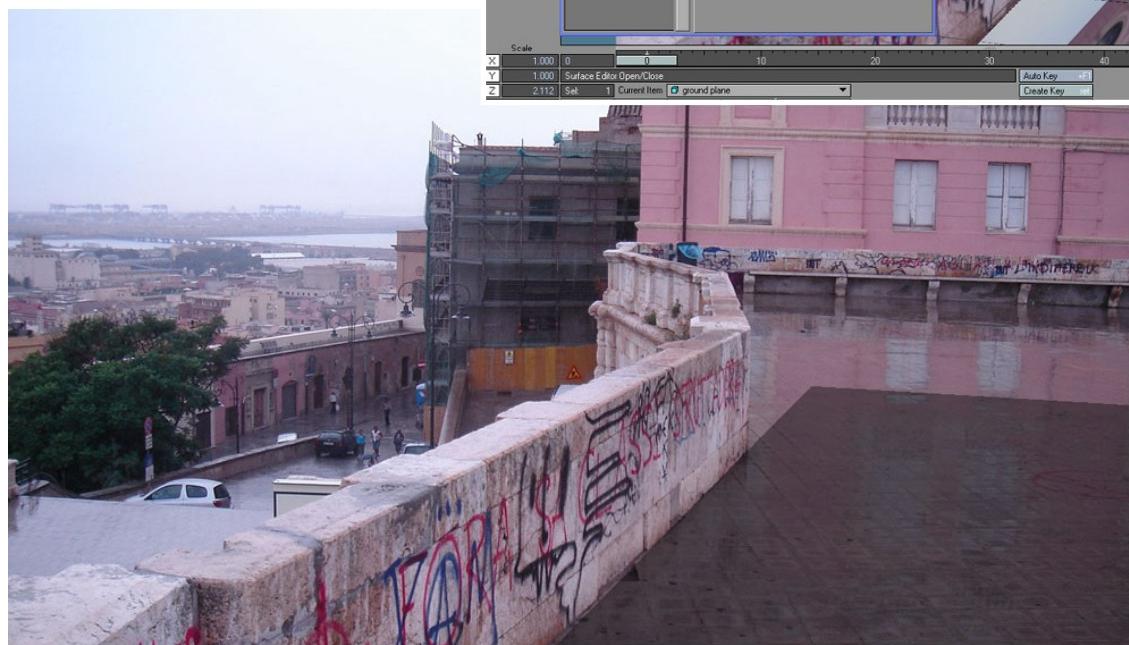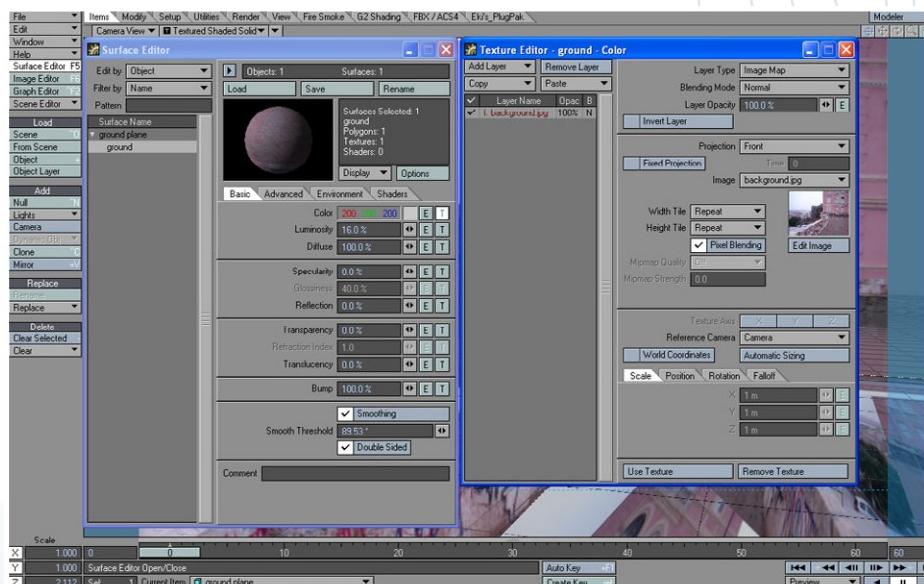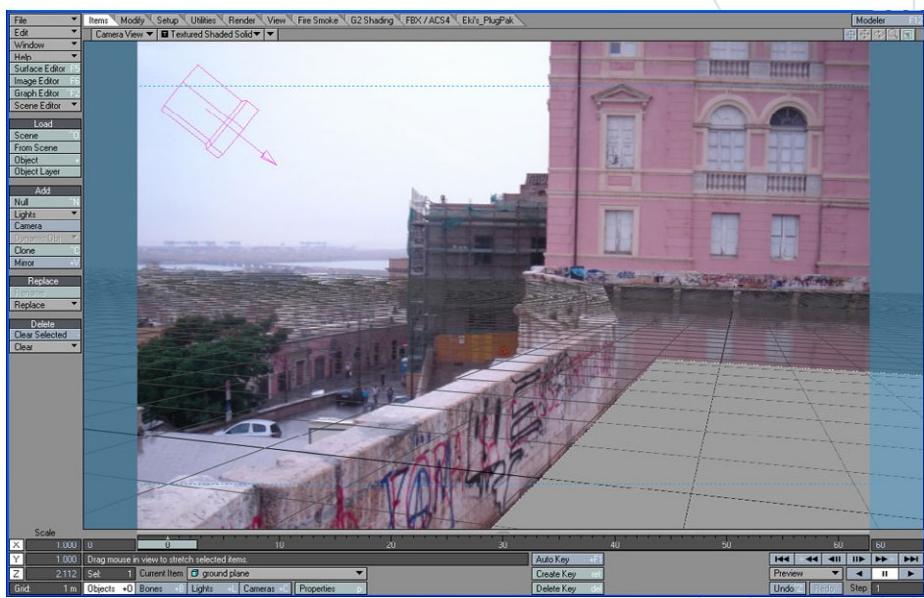
Step 4
Lighting

Currently, our ground plane isn't seamlessly integrated because our LW lighting setup doesn't match that of the photo, so consequently the ground plane sticks out a mile. We need a way to create some soft ambient diffused lighting to match our images. We can do this using global illumination, or ambient intensity, however neither of which cast shadows, so a good way is to 'fake it' by using the 'spinning light trick'. This involves an array of lights spinning very quickly to produce the kind of bounce light you find in day-time lighting. We could do this manually, but its a longwinded process and takes time. Instead, we will use an excellent plug-in called 'overcaster' by eki halkka (http://www.kolumbus.fi/erkki.halkka/plugpak/index.html). This can be downloaded and installed for free, however I do urge you to register and pay a small fee for such an excellent plug-in (please follow the installation instructions on eki`s website). Once downloaded and installed as a normal plug-in, we can use the 'oc ambimage' part of the plug-in to create our nice soft diffused lighting. Click the "oc ambimage" button on the menu, which the installation creates for you. Simply accept all the default values and choose "ok" until the plug-in installs a slider lighting control in your scene (fig 07). Select your original LW distant light and remove it from the scene. Adjust the scene to start at frame 2 and adjust your camera's motion blur to 'dithered'. This will allow the lights to complete the "spin" and give more accurate shadows (fig-8) This time, make sure that "ray trace shadows, reflection and refraction" are enabled in your render options panel. As you can see, the ground plane is still too dark. You can now adjust the ground planes luminosity and diffuse channels until the
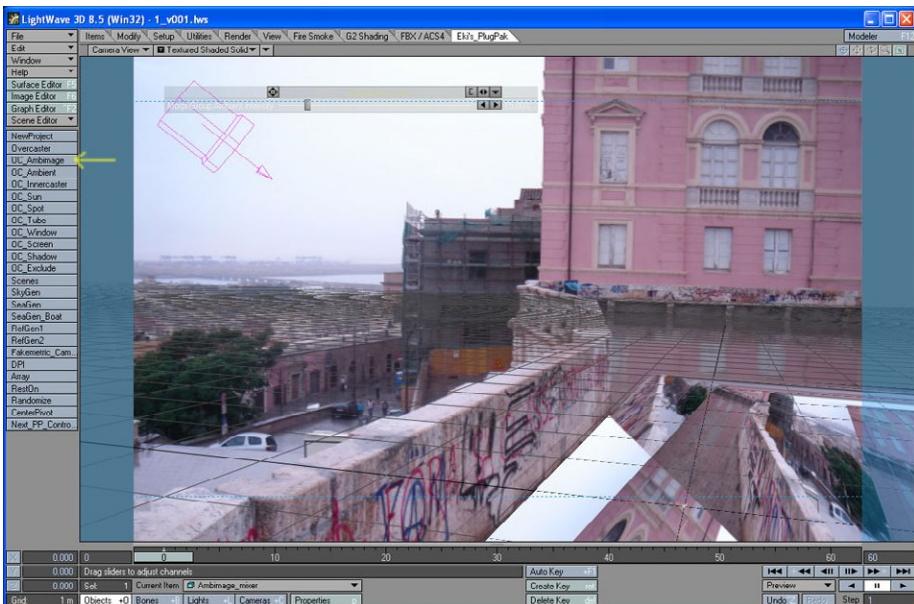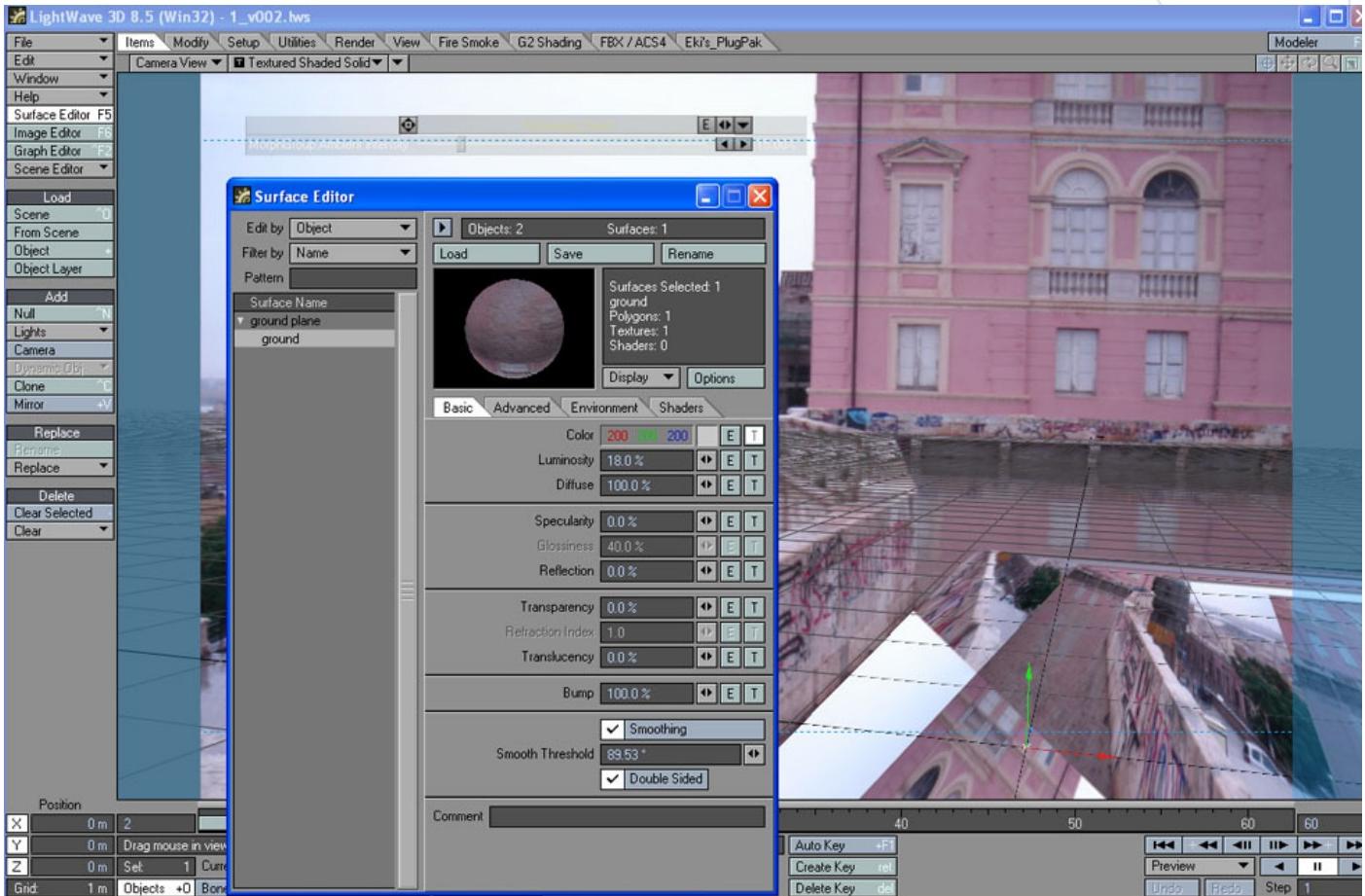
surface of the ground integrates seamlessly with the photo. It takes a few tweaks and renders but I found upping the luminosity to between 17 and 18% gave me a seamless integration (fig 09)

STEP 5
3D OBJECTS

Now is a good time to save your scene and all objects! Now we have successfully completed our ground plane, you can add 3D objects on top of this plane and their shadows will cast onto the ground - integrating them into the scene. For this, I choose a classic mirror ball, nothing fancy - just a sphere with a high reflective value, and "ray tracing + spherical map" applied in environment options of it's surface, and the background image was chosen as the reflection map (fig 10). Render
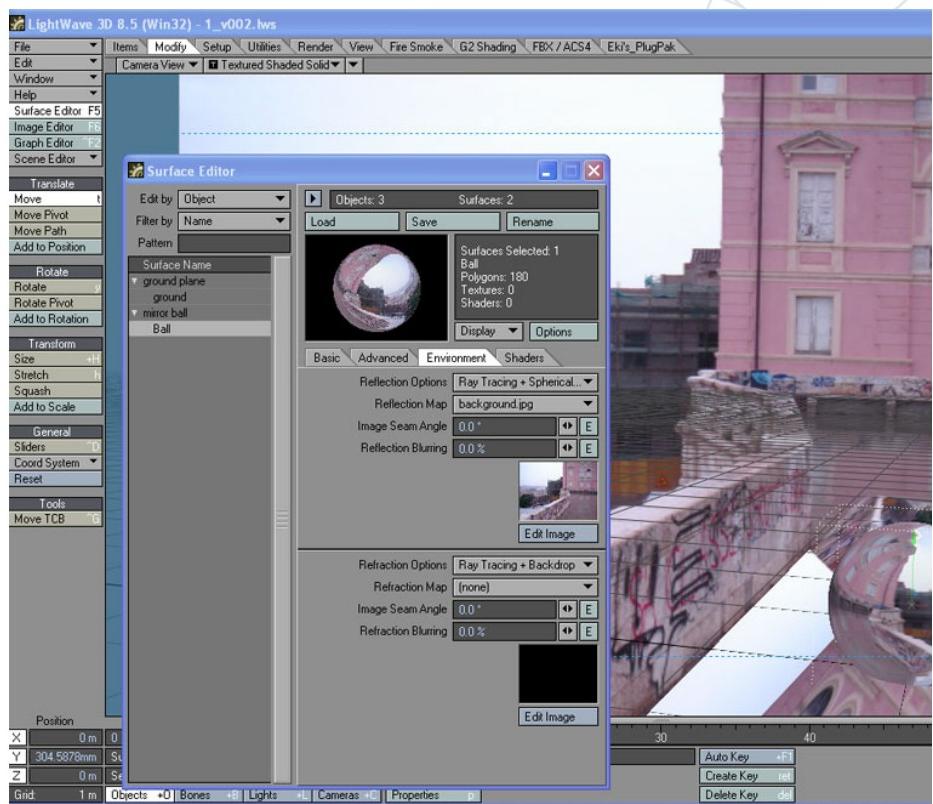
a frame and you can see how well the 3D elements have integrated into the original photo (fig 11). For extra realism, rotate the reflection map on the mirror ball 180 degrees and tweak the surface diffuse and reflection channels to match as you want. Obviously, this is just the basics. Extra geometry could be added so that you can catch shadows on different elements in the image, and different lighting would require either more or less ambient light, so you would have to tweak your Sliders until you find out what works best!

Tutorial By :

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Making Of

Nintendo

ENTERTAINMENT SYSTEM

By Michael Knap

Nintendo
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MAKING OF 'NINTENDO ENTERTAINMENT SYSTEM'

MODELLING:

To begin, I started by modeling the top of the Nintendo. To be able to render the scene from every angle, I had to include details both inside and outside the model.

The next thing to do was to model the bottom. All parts were made using the poly modelling technique. As you can see the model is fairly simple in shape, so it wasnt too difficult to create.

TEXTURING:

After modeling the first part, I started making some test renders to get an idea of how it all will look in the end.
To get the exact form of the machine I put my own Nintendo on the scanner and scanned in the parts that I needed for texturing.

This was the how it looks after I have finished texturing the model.

After I was done with the test renders, I decided to continue and complete the modeling.
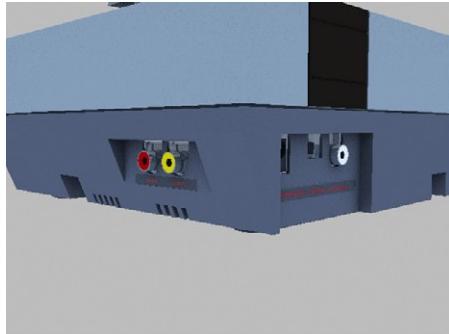
Rendering:

When it was time to render the final image I decided to use Vray. I would normally use Final Render but this time I wanted to try something new. After a few hours of tweaking, the final image was ready to render.

The settings I used in the scene were simply a normal direct light with vray shadows and a hdri map to light up the scene even more and that's all.

Using Vray's depth of feild, I was able to give the final image some depth, and define the focus.

Making of by :

MICHAEL KNAP

knap@3d-animation.dk
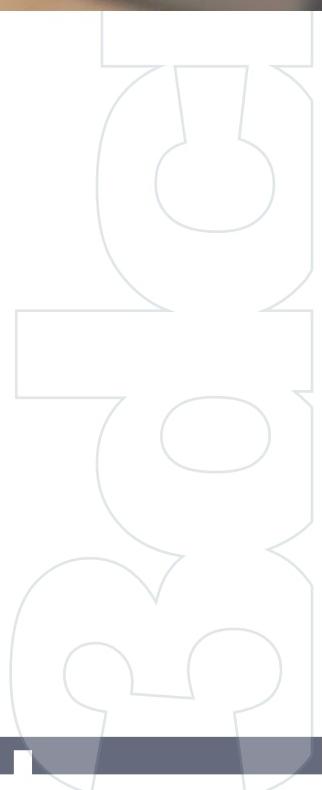
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MAKING OF FURNITURE CLUSTER

BY MATHIAS KOEHLER

Read on to discover what inspired the making of this fantastic 'Furniture Cluster', and find out exactly how Mathias Koehler went about creating it...
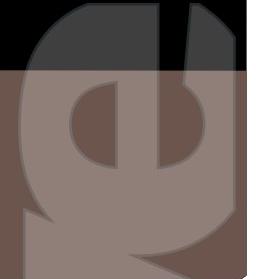
Furniture Cluster

by Mathias Koehler

1. Introduction

I got the idea for this image, when I had modelled some furniture for architectural visualization renderings and then thought about throwing everything together. I carefully moved and rotated the furniture to build a large cluster. This was actually the hardest part. I've then added a really simple environment - a room with 3 windows (at the right, not visible). To make it more interesting I've cut a hole in the ceiling and placed a biped on top of the furniture. I first thought about creating my own character, but I didn't want to spend that much time on this image, so I've just used a chrome biped. To add some mood I've also added some volume light.

2. Modelling

I've usually started with primitives and then tweaked them, using Editable Poly. I was trying out the trial version of PolyBoost at this time. It provides some awesome modelling tools, like Polydraw, Flow connect, Flow adjust, Loop tools, very nice Selection tools and much more. Take a look at some of the furniture stills: Chair 1 is made of box primitives. The curved wooden seat of Chair 2 was done using Polydraw then bent with a bend modifier. To give it some thickness I've used the shell modifier. The chair legs started out as splines, then were extruded and again thickened by using the shell modifier.Chair 3 and Chair 5
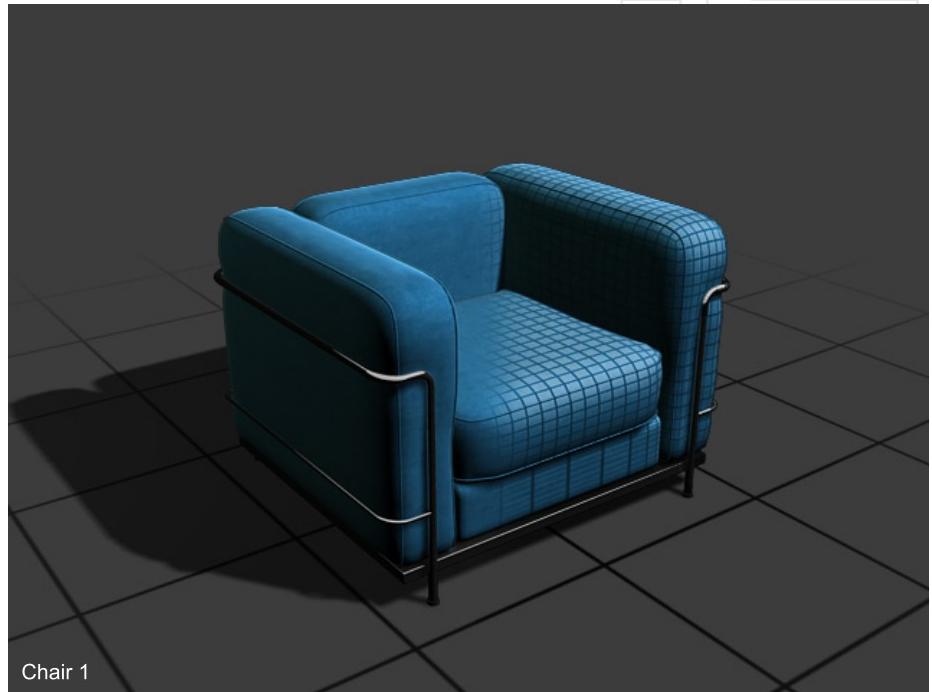
Chair 1

Chair 2

Chair 3

Chair 4

Chair 5

were initially Editable Patches and were later converted to EPoly. Using Editable Patches you can easily lay out complex curved shapes. The grating of Chair 3 was done using the lattice modifier. Chair 4 was modelled using a box as a base. I've then extruded the back and the 'legs'. As you can see on this pic the room is really simple. It's made of a box with flipped normals. I've then cut in the windows using 'inset' and that's it already (Scene).
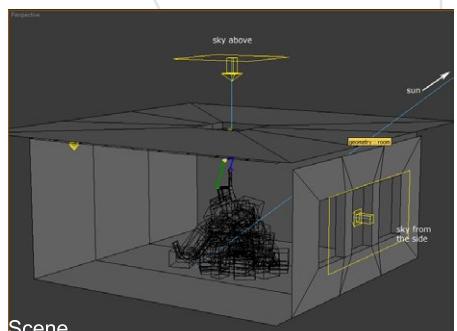
Scene

3. Materials/Texturing

Not much to say about materials/texturing. I've used photo-textures everywhere; tweaked to my needs. Most of them were free ones I've found on the net (mayang.com for example), some of them are from the 3D Total Texture CDs (good stuff!).

Here are some general tips:

Reflective materials (metals, chrome, glass...) will only look as good as the environment around them. A basic room will make a big difference already. Also make sure there is something really bright to reflect. White self-illuminatiing planes are great for this. You can also use a HDRI map if you like, but I prefer to create the environment myself in most cases (it provides more control and I think it gives a cleaner look). Most Fabrics have some short and thin fur all over their surfaces. You can mimic this look by using a material which turns brighter as the surface turns away. In Max this can be achieved by using a fresnel map. It can also be done by using back lighting, but this isn't that useful in complex scenes in my mind.
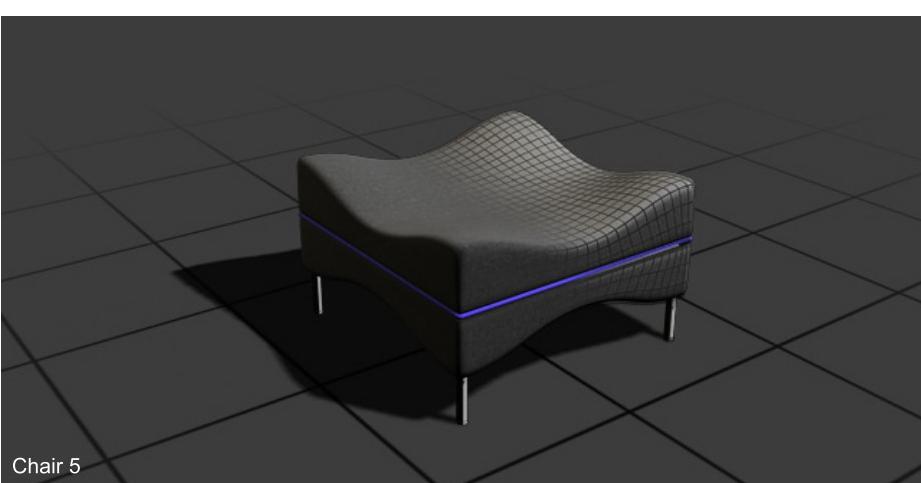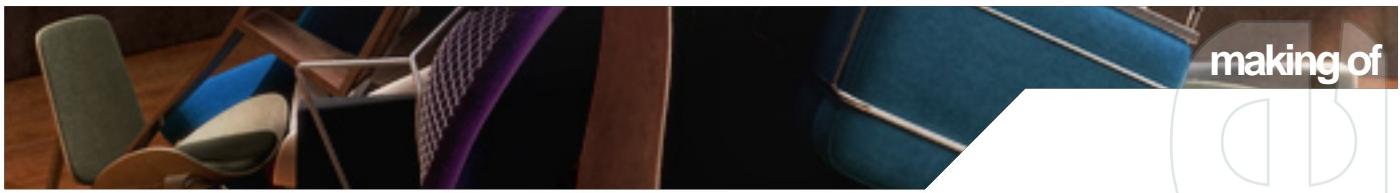
4. Lighting

I don't advise to use skylight in interior renderings. I prefer to use Area lights, placed outside in front of the windows. I think it provides more control and better results. I've used one area light at the top (sky) and a second one on the right (windows). Those simulate the skylight. There is also a direct light (sun), which is used as the sun.

Furthermore there are some IES lights, but they don't add much to the overall lighting and are just used for decorative purposes. I've played around for quite some time, to find the settings I liked most (clay). I recommend to do a lot of test renderings using only plain materials, low sample settings and a low resolution. The area lights are using a very bright blue (nearly white) colour, while the direct light is using a yellowish/orange colour. Final Render comes with a handy feature called 'Area Speculars'. So depending on the scale of your area lights, the speculars are going to change too (speculars are fake reflections). So you basically don't need white planes if you are using area speculars, but sadly they are a bit slow to render. Anyway, both methods give nice results. If you are using white planes, position them where the area lights are.

Clay

Sky

Window

Sun:

MATHIAS KOEHLER

Render

Composite
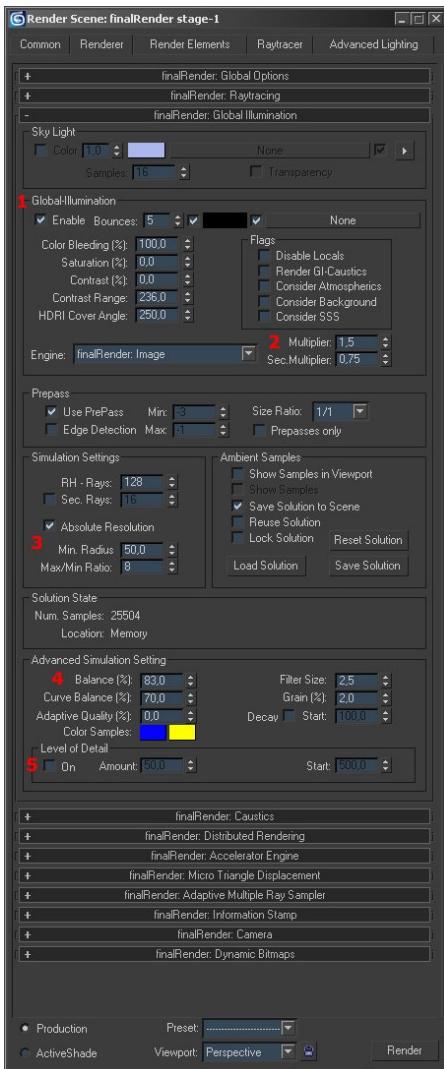
5. RENDERING

For interior renderings I'm using at least 5 bounces (1). In some cases up to 10. I'm also using higher multiplier settings, as I would use for outdoor stuff (2). The sample settings are very scene dependent, I prefer using 'absolute resolution' (3) because it doesn't depend on the overall scene scale and I'm therefore able to use the same settings no matter what scene I'm working on. Notice that the values I've used depend on the units I've set up (cm in my case). Using those values you can locally define the sample placement working with a radius and a ratio setting. With the following settings (4) you can globally control the density. Although I haven't used
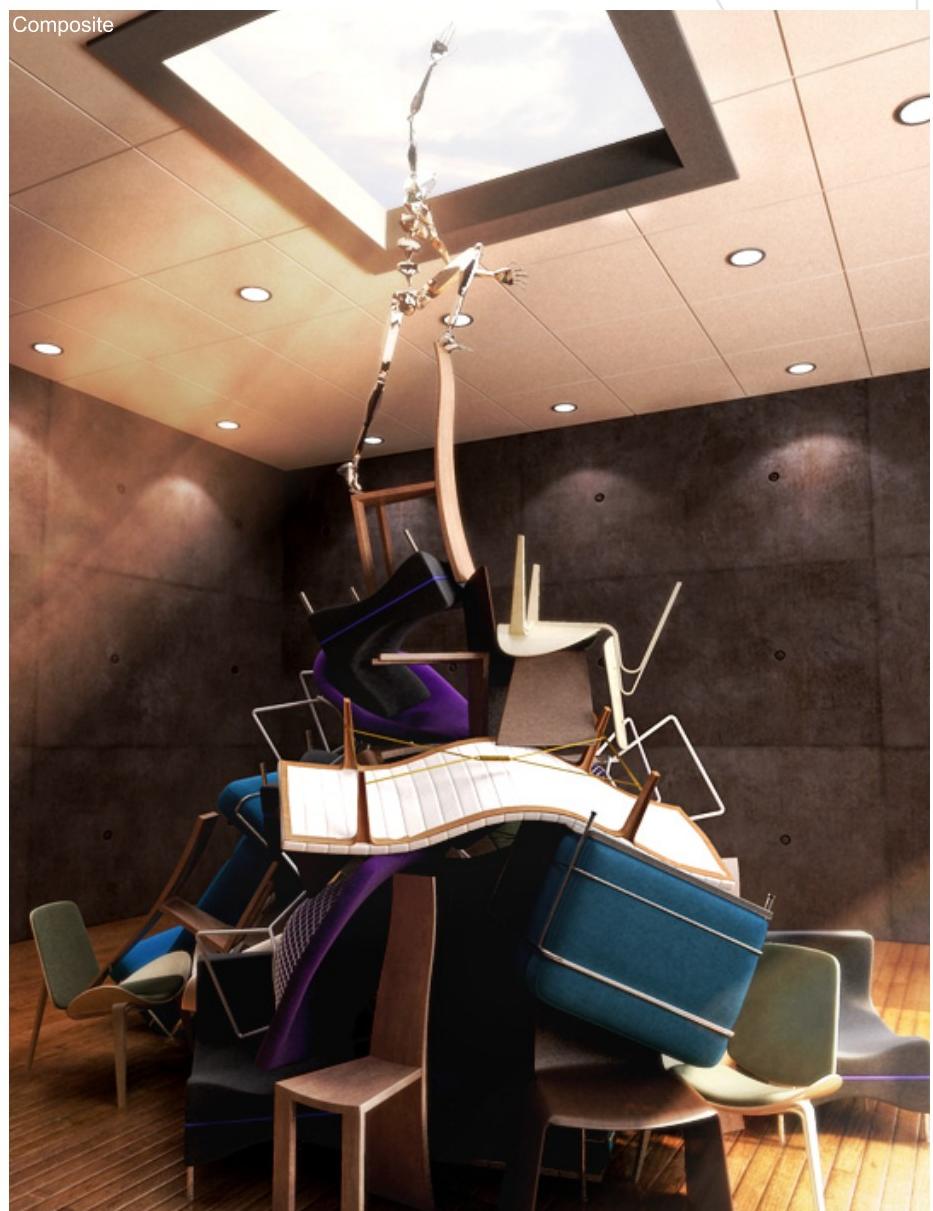
the LoD settings (5) in this pic, but they are worth a mention anyway. They become useful if you are working with scenes which have a lot of depth. Using those settings you are able to decrease the samples depending on the z-depth.

6. COMPOSTING

This is the final step, I've taken the render added a background and the volumefog and done some colour corrections and brightness/contrast changes. I could add the background and volumefog in Max itself and render it

straight out, but this would mean I need to make additional test renderings. Doing it in post is faster and provides more control.

Notice that this making-of just shows my own way of working and thinking. I hope you've found this somewhat useful!

Making Of By :
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DIGITAL ART MASTERS

48 of the Worlds leading digital artists showcase their artworks in Digital Art Masters I. Accompanying each work of art is an artists breakdown of how the piece was created giving an insight into their working techniques. Included in these 'behind the image' details are the stages, elements, layers and processes into creating 2D digital art whilst the masters of 3D share tips and tricks for modelling, texturing, lighting and rendering. When these components come together into final renders we are privileged to view some of the finest artwork within the world of computer graphics.

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DIGITAL ART MASTERS :VOLUME 1

Starting last month and for the next 5 months, we have exclusive chapters from 3DTotal. com's new book 'Digital Art Masters'. The book is more than just an artwork book as not only does it feature full colour, full page images, each artist has described the creation process in their own words, and exclusively for this book. This month we feature:

'Robo'
by Juliano Castro

Robo

By Juliano Castro

fig 1

Modelling

The modelling process is quite easy, since the robot has separated parts, that are both parts of his body, and the animation structure. He was built to be animated, not simply to render, so each part was designed to behave as part of a bone structure.

The technique used was poly modelling, employing simple primitives to get a fast and good shape result. The femur, for example, are simple spheres connected by a bridge of polygons (1). The hands are made from simples boxes and the fingers, modified spheres. My main challenge in modelling with basic primitives was to get a really cool cartoon design without spending hours and hours making a complex model. I asked myself how simple can I build a good and charismatic character... well I thought I would get a good result from simple and fast modelling, good design and a functional animated body.

172

These Shots of the book pages are full resolution and can be read by zooming in.

Texturing

I think the most complex part of this project was texturing. In spite of his cartoon style and simple shapes, the nature of the character asked for a little bit of complexity in the textures. Since he is a robot, I tried to give him a metallic aspect, but as he is a working robot, we can use our imagination to give him some life. I tried to show that he's not a brand new robot, that's why he has some scratches, and peeling (2) paint, located on his hands (3), feet and on his belly (4), where there's a kind of oven. My intention was to show the parts that are used more frequently than parts that naturally wear through time.

I used hand-painted maps, and I tried to separate each scratch from the base colour, also the letter "H" (4) and the peeling parts. Separate parts are very helpful when I'm building the bump (5) and specular maps (6). The bumps make the scratches more visible, and help to show the weathered look. The specular maps make the scratched and peeled parts more flat, in contrast with the painted (yellow) parts that are polished.

I take advantage of this approach to design the mouth and eyebrows. The texturing process was the main component in this project. The challenge here was to give him a more realistic look, without losing the cartoon style, and discover the best way to improve the personality of the character through his textures.

fig 2

fig 3

fig 4

fig 5

fig 6
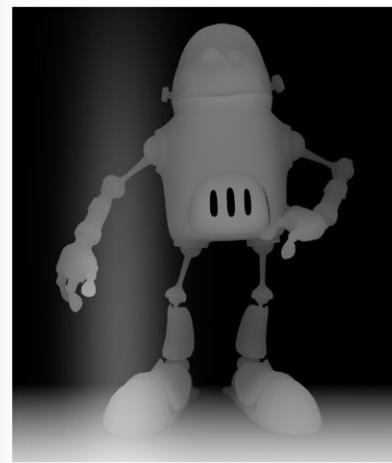
Lighting & Rendering

Since the image has no background, the light was set up with only the robot in mind. It's a very simple light set-up, with two lights, and I used the renderer to calculate Global Illumination with an influence of the orange colour on background. This gives the image more atmosphere.

To get a better render, I rendered a Z-depth image (7), that was used in post-production to simulate the depth of field. I also used post-production to make the yellow-to-orange gradient, to get a centralized composition, helping to show the silhouette of the robot. Some colour adjustments were made to give the render a better look, along with a little bit of noise to help in the depth of field effect.

fig 7

Portfolio examples

173

174

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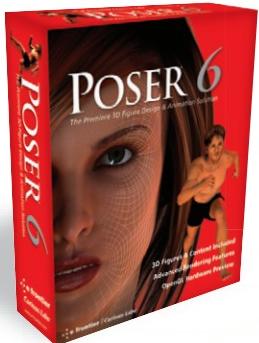
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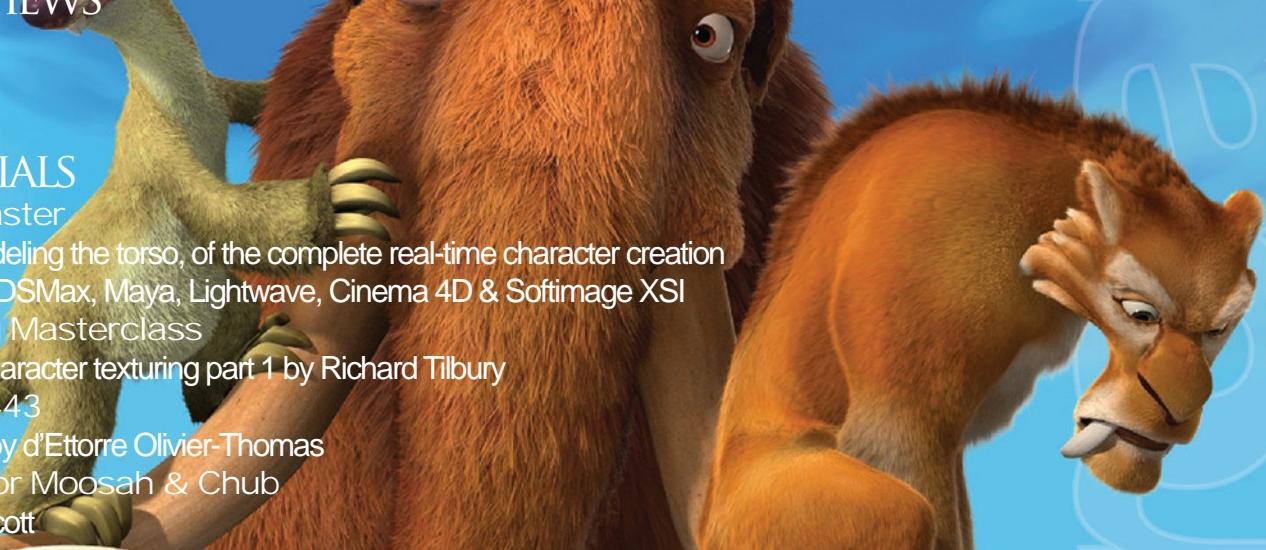
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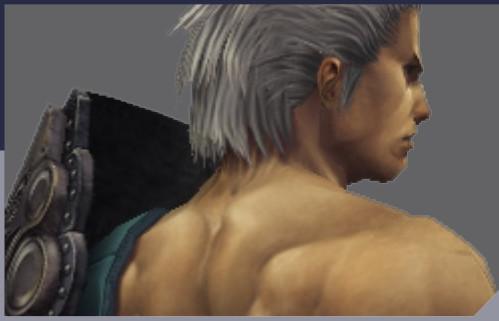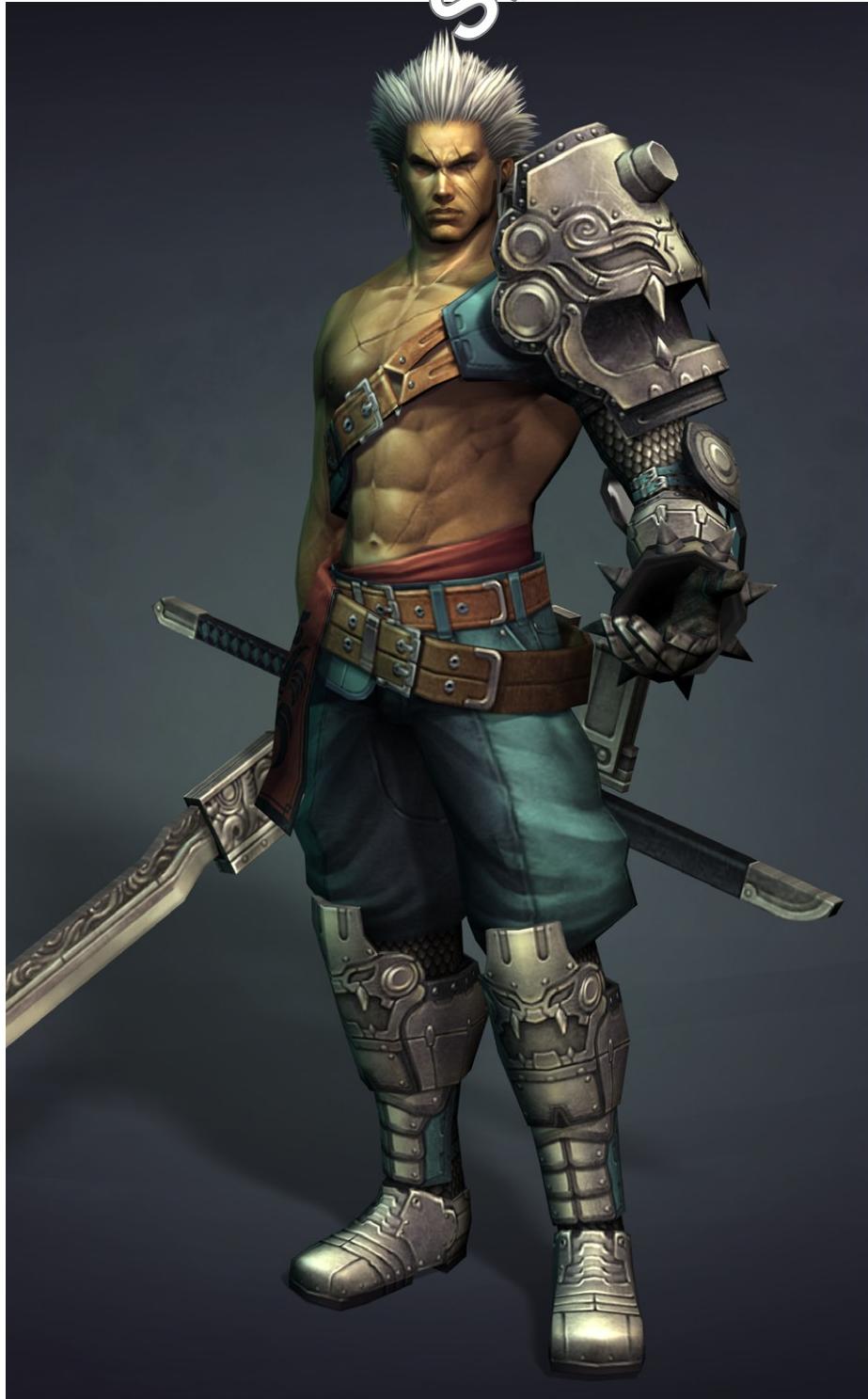
The Swordmaster

⑤3ds max

Is our new precise, step by step tutorial for highly polished, low polygon game character with detailed texturing for real-time rendering. We have had the tutorial created for the 5 major 3d applications, but even if you are not a user of one of them, the principles should be easily followed in nearly all other 3d applications. Over the next 8 months we will outline in detail the process for creating the 'Swordmaster' you see on the left. The schedule for the different parts of the tutorial is as follows:

Enjoy ...

PART 1
MODELING THE HEAD

INTRODUCTION:

Welcome to the first of an ongoing tutorial which will run over the next eight issues and provide a step by step guide to building a low poly character based upon a model by Seong-Wha Jeong. Over the next eight months we will be covering how to build, map/unwrap and texture the character based upon the original. As the original model is low poly and tailored towards a game environment the mesh is not made entirely of quads and so we shall also be making use of a few "tri's" in places to minimize the mesh density. In this first section we will start by creating a simple box and then moulding it into the final head shape using the editable poly tools.
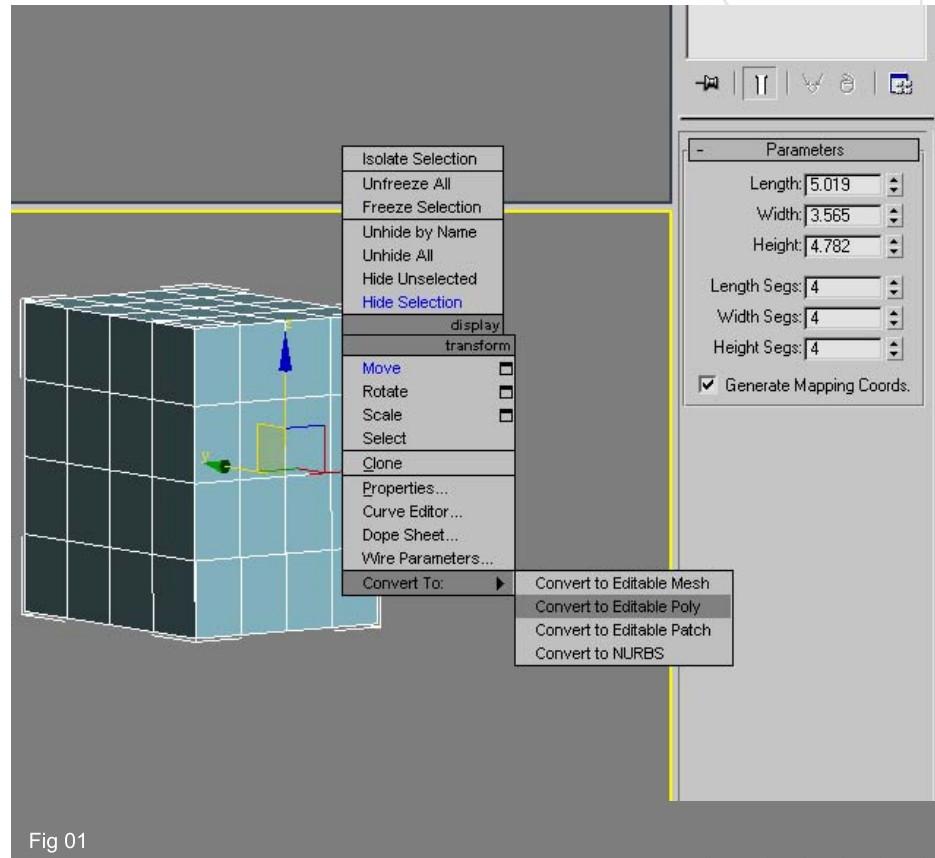
Fig 01

1. The first step is to create a box with 4 length, width and height segments as shown on the right in Fig01. You will notice that the"Generate Mapping Coords"box is checked but as we are going to map our mesh later on this is not important here. Right click on the box and select "Convert to Editable Poly "from the dialogue box.

2. With our box now converted to an Editable Poly we can now begin shaping it at the sub-object level, ie. vertex, face, edge etc. Select the vertex level under selection and begin by moving the verts in the left or right viewports first to get the rough profile shape. Be sure to keep the "Ignore Backface" box unchecked so that you select all the verts across the mesh, evident in the User viewport. In this way we can keep our mesh symmetrical on both sides of the center (Fig02). I find it is best to work in a profile view and move the verts into a reasonable shape and then switch to the front view and do the same.
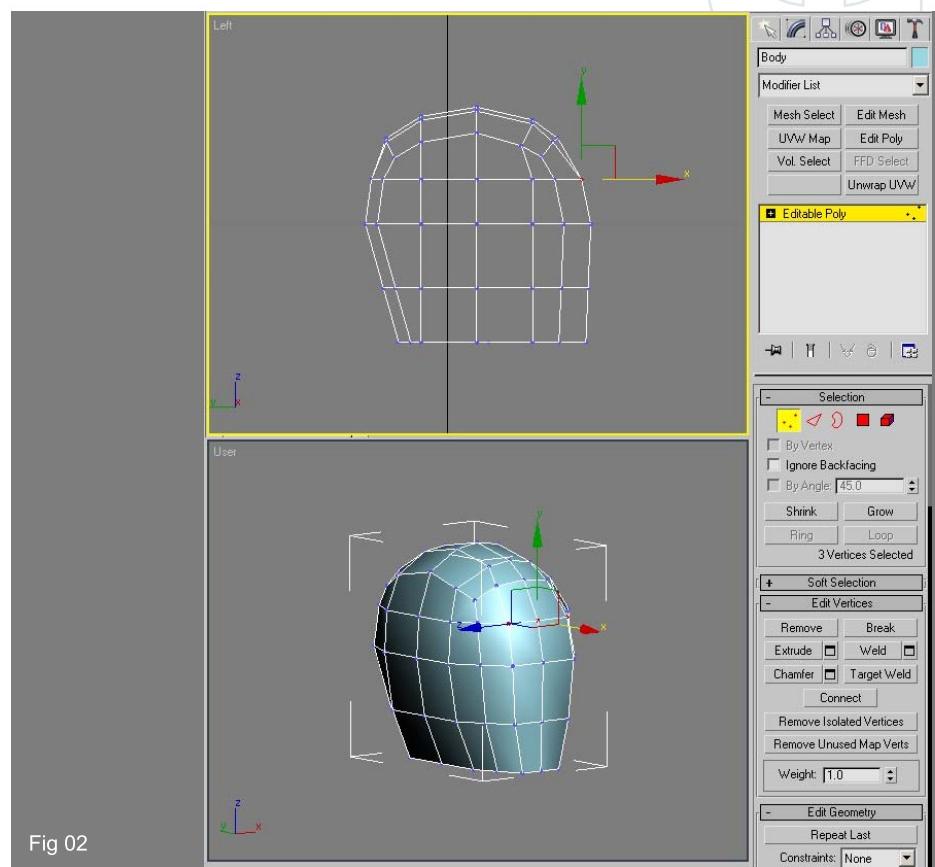

Fig 02
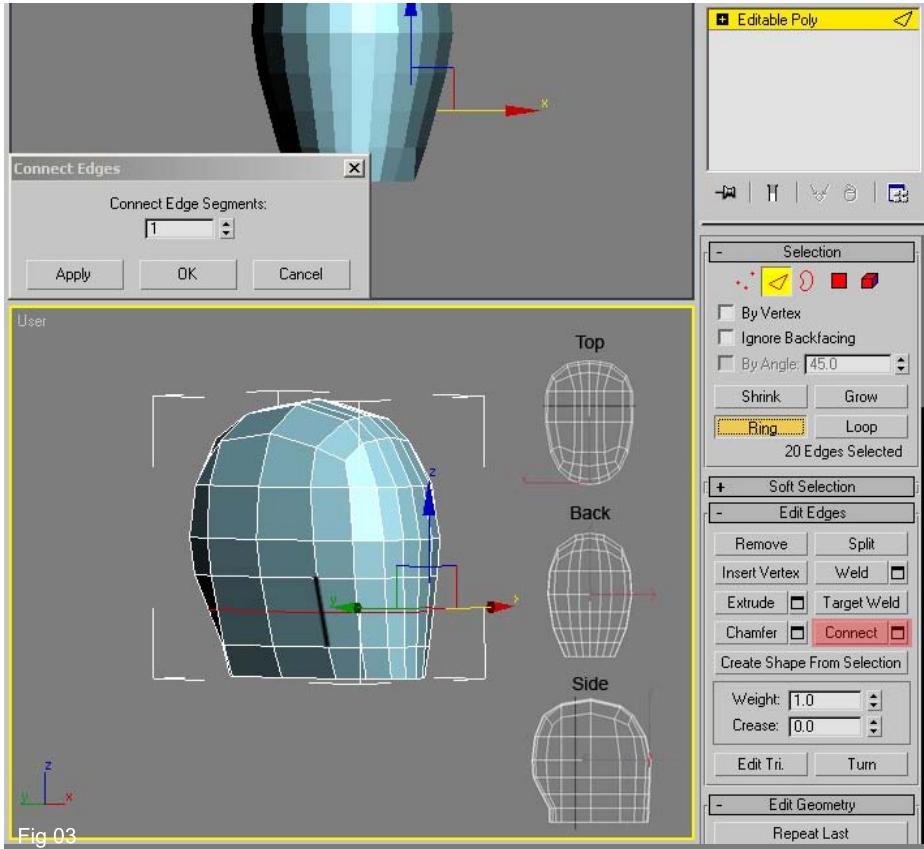
Fig 03

3. Once you have shaped the existing geometry it is time to add a subdivision by selecting an edge (shown in black) and then clicking on Ring, followed by Connect (highlighted in red) in Fig03. By selecting the little square to the right of the tab you can bring up the dialogue box where you can alter the parameters. You can see in the top left that I have chosen just one segment in this case. Much of the modelling process will involve this procedure after which the new verts are then manipulated into better positions. You can see the variuos views of the mesh at this stage on the bottom right.
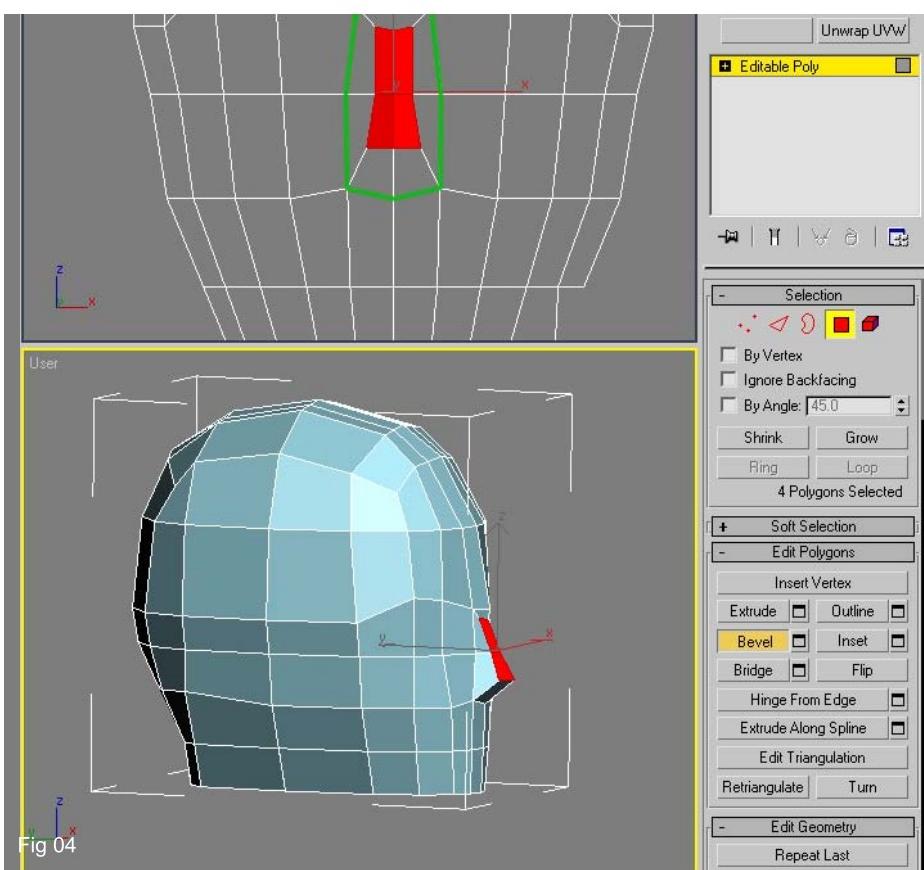
Fig 04

4. Now that we have a rough shape to our head it is time to add in some of the features. Select the two central poly's (ringed in green) and then click on the Bevel tab on the right and bring them outward, scaling them down somewhat (Fig04).

5. The next step is to make a start on the eyes. Select the two poly's that are ringed in green in Fig05 and then click on the little square next to the Inset tab (highlighted in red). Click on the "Group" radio button and then simply alter the inset amount to form the eye shape similar to the image. If you select "By Polygon" each poly will be inset individually – something we wish to avoid.
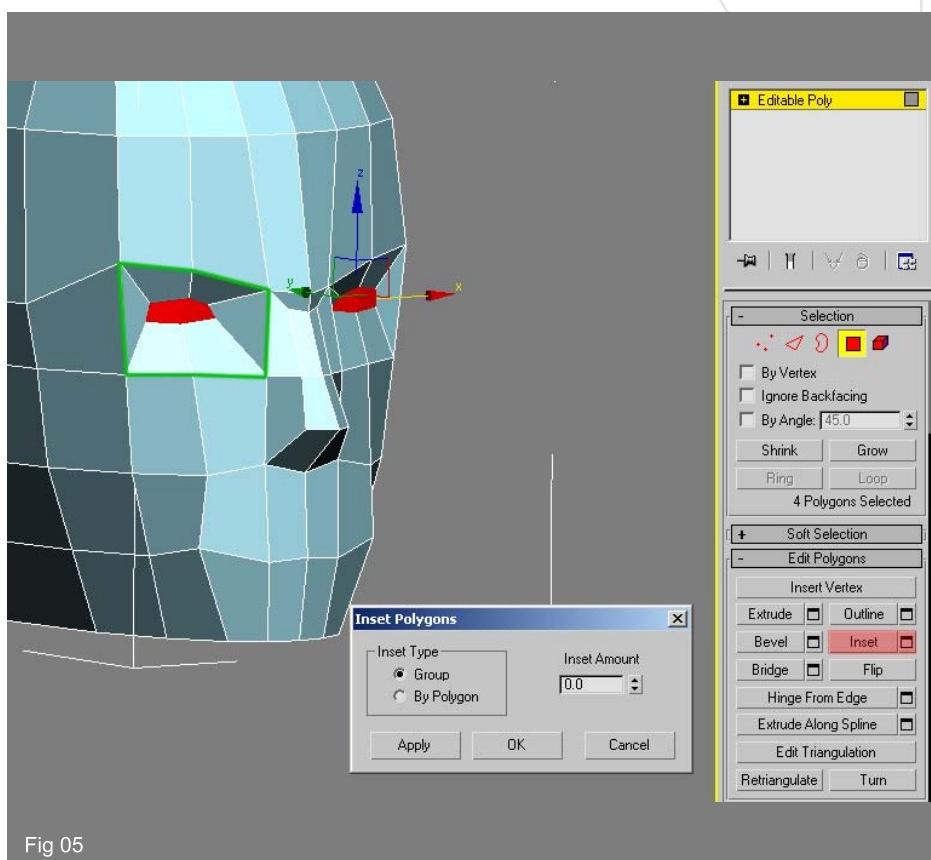
Fig 05

6. With the nose and eyes underway we have just the mouth left to make a start on. Select the four poly's highlighted in green in Fig06 and then use the "Cut" tool on the right to make four horizontal cuts (shown in red) emanating from a single vert. Once this is done simply move the new verts into positions to form a mouth shape as seen in the image.
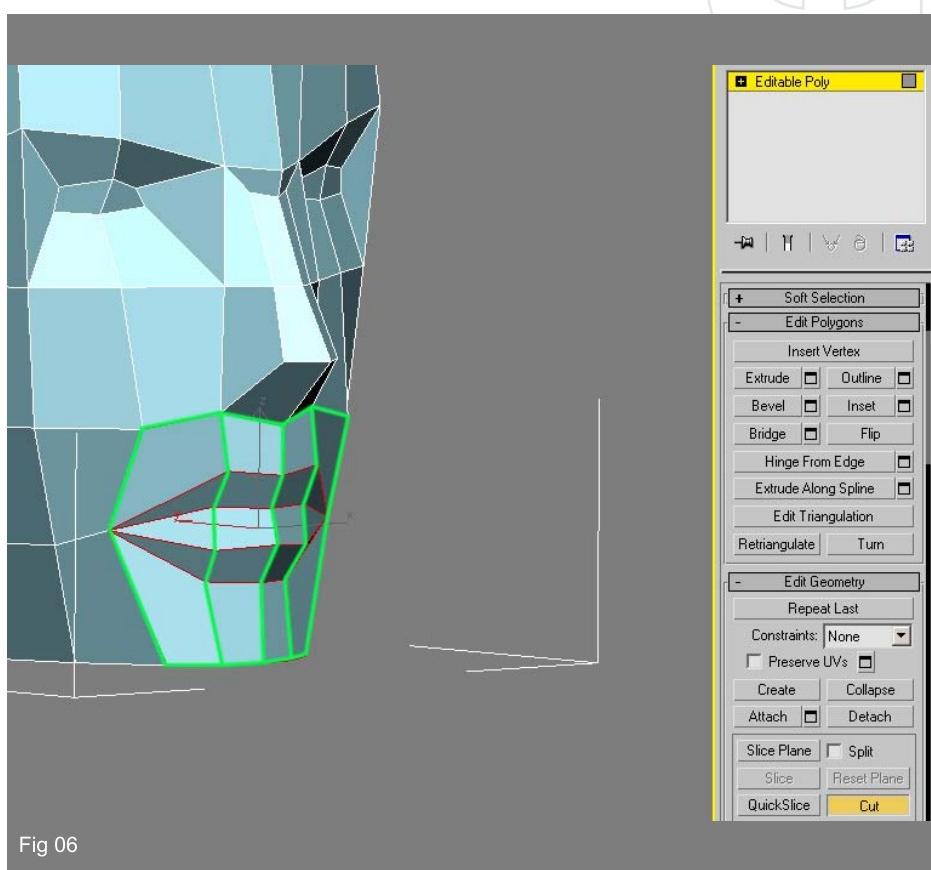
Fig 06
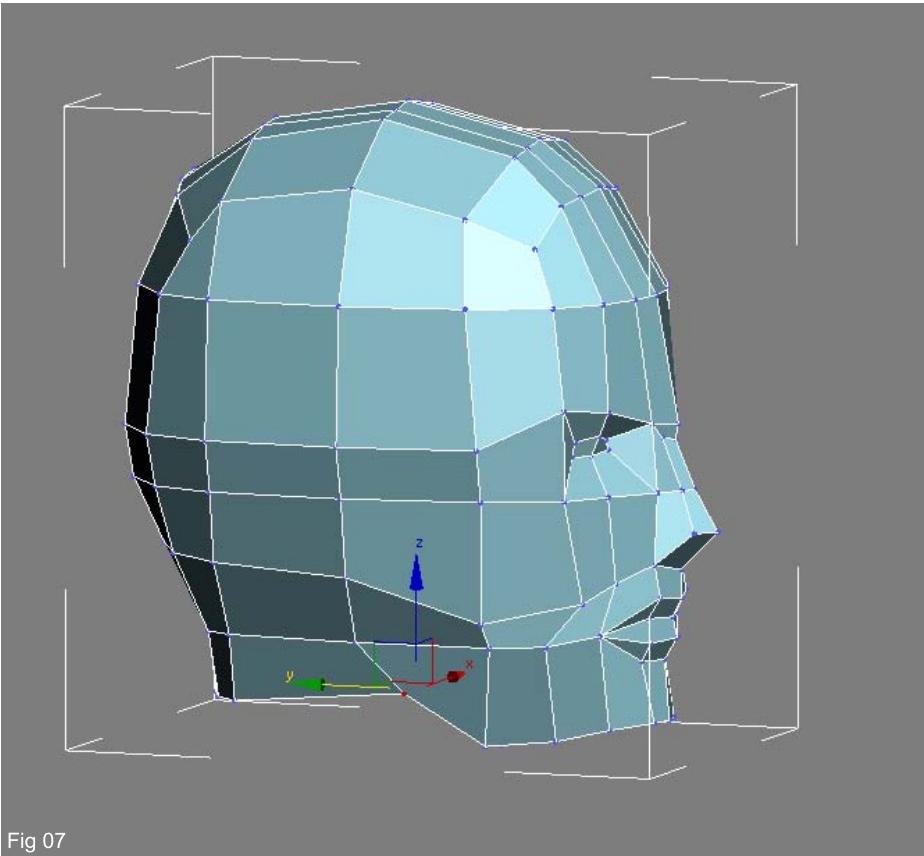
Fig 07

7. The features are now beginning to form, albeit in a rather crude way but there is still no evidence of a chin so pull up some of the lower verts to alleviate this (Fig07).
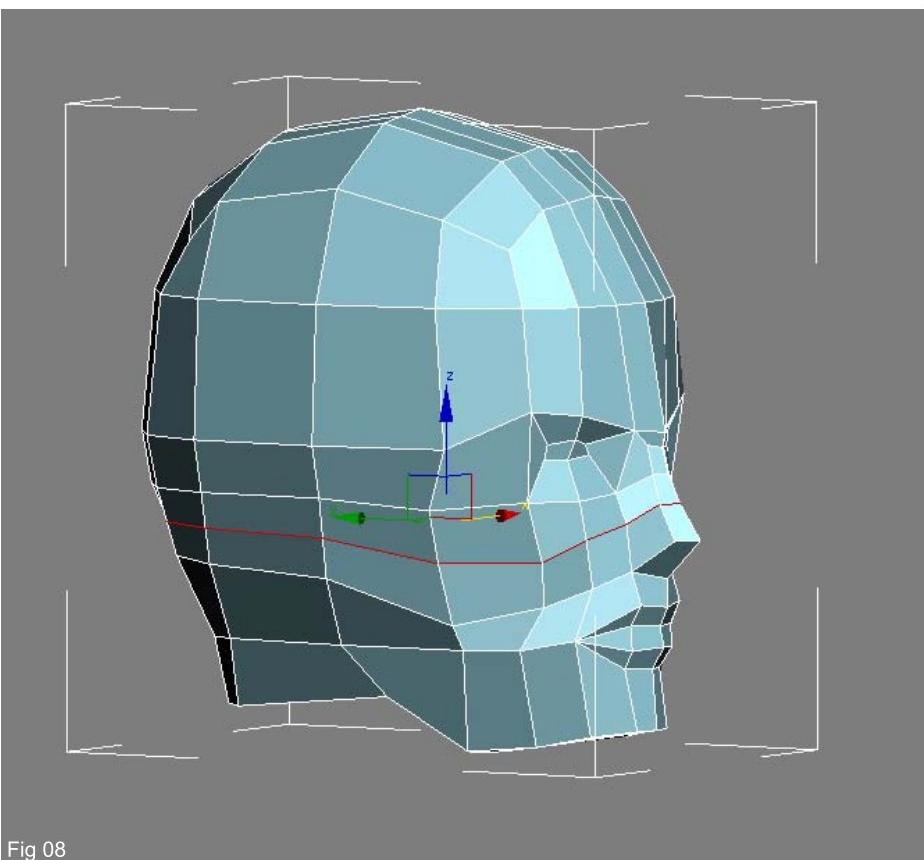
Fig 08

8. To help refine the cheek bone and nose shape use the "Ring / Connect" tools to add in a further cut around the head as shown in red in Fig08.

9. Now that we have a reasonable amount of detail it is time to delete half of our mesh and apply the Symmetry modifier in order that we can work on just one half of the model and see the results mirrored in a duplicate. In this way we can ensure that the head is the same either side of the central line but reduce the number of poly's that need manipulating. Begin by selecting the "Window/Crossing" icon on the tool bar along the top of the viewports (top left Fig09). Now in sub-object poly mode, select all of the right half of the head (make sure Ignore Backfacing is unchecked) by including part of the left side just past the central line. Delete these poly's,go to the top of the stack and then apply a Symmetry modifier from the modifier list making sure the head is mirrored along the vertical axis as shown on the right of Fig09. When you go down the stack to the Editable poly level the duplicate will now disappear. Toggle the "Show end result "button so that you can see the copy and now when you work in sub-object mode at the editable poly level you will see the results mirrored (bottom right of the image).

10. Now we are working purely on the left side of the head select the poly's highlighted in red in Fig10 and use the"Cut" tool to make two horizontal cuts joining the middle verts. This will help create a more convincing socket shape for the eye and remove the sharp angle apparent in Fig08.
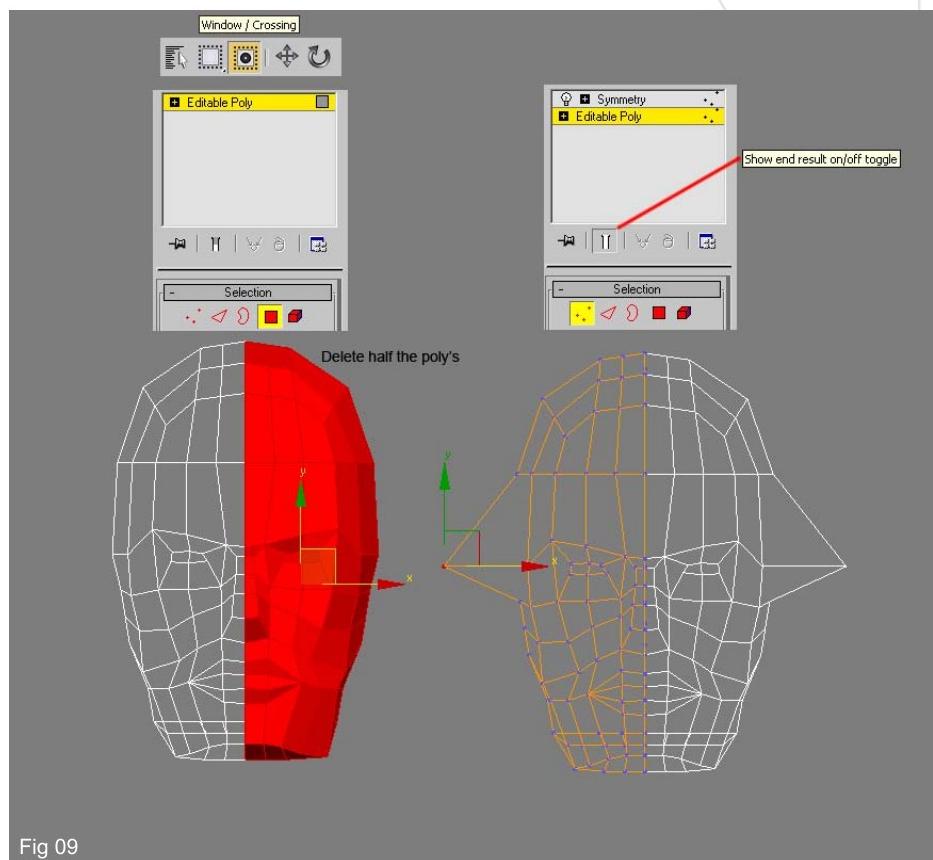

Fig 09
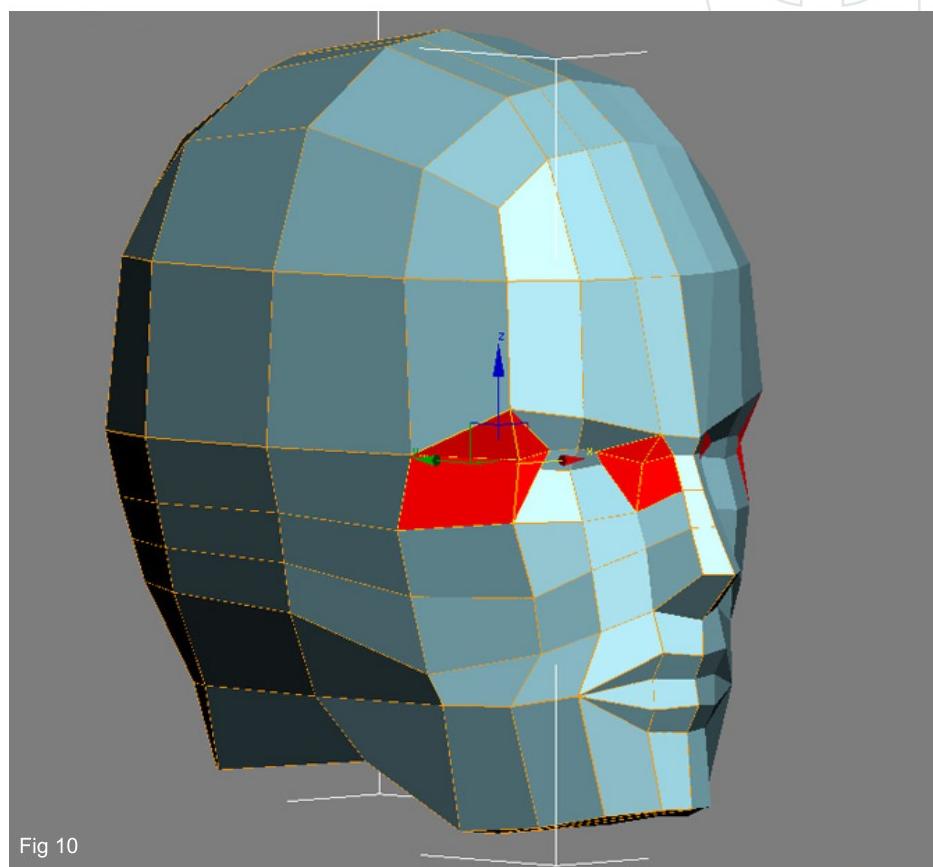
Fig 10
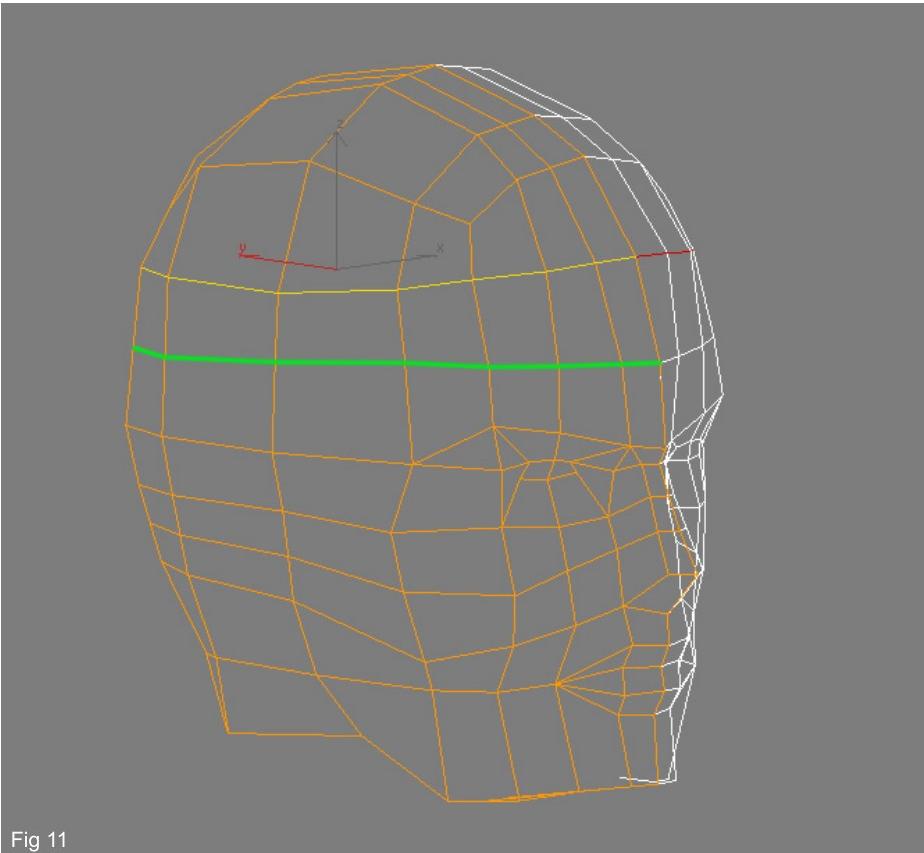
Fig 11

11. The eye area is somewhat improved but we need some more detail above the brow so move the existing line of verts up slightly (yellow line in Fig11.) and add a new subdivision below this and the brow (green line) which will help form a better forehead shape.
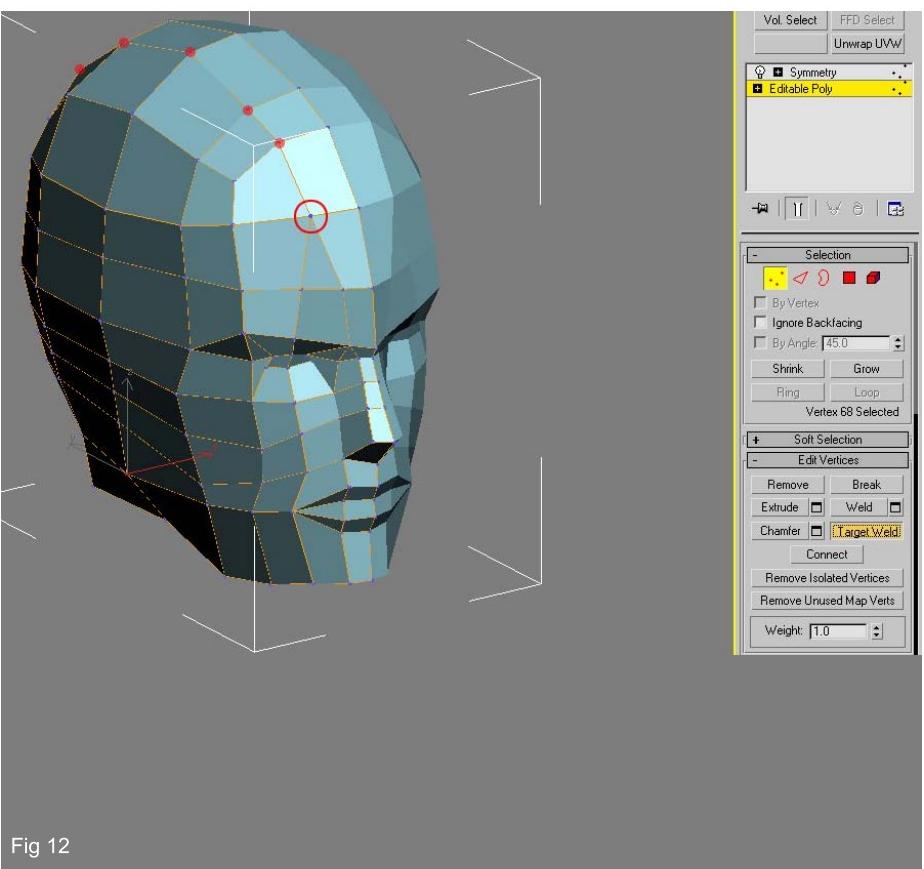

Fig 12

12. As we gradually refine our model we inevitably add more detail but sometimes it is useful in low poly characters to actually remove unnecessary detail that can be supplemented by a texture. At the moment we have six rows of polygons running over the top of the head – more than we really need. In Vertex mode click on the "Target Weld" tab and weld together the line of verts running upward from the corner and center of the eye starting with the one ringed in red in Fig12.

13. We have partially improved the eyes and so should refine the other features. First thing is to get rid of the harsh angle under the nose so select the poly and apply a Bevel (Fig13). As we are working on a mirrored half we now end up with unwanted poly's between the selected polygons. Delete these and then move the inner verts to line up with the central line using the snaps tool. One other thing to do is add a cut below the lips to create a better shape to the chin (highlighted in red).
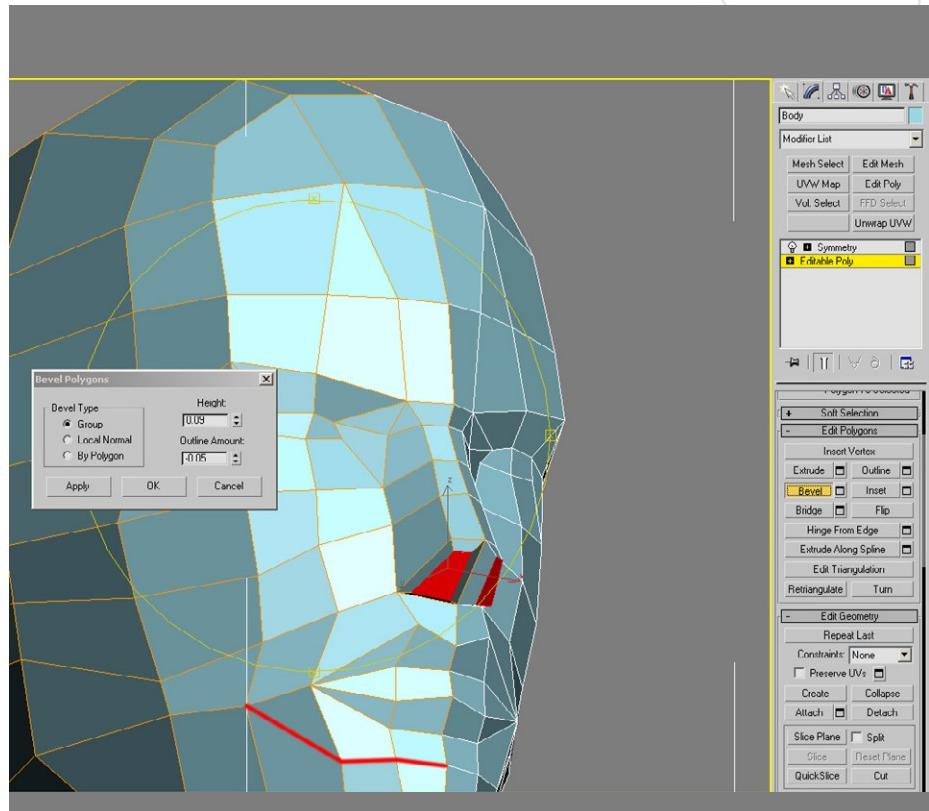
Fig 13

14. On the nose weld the middle vert to the one below and the one on the left to the adjacent corner one (Fig14).
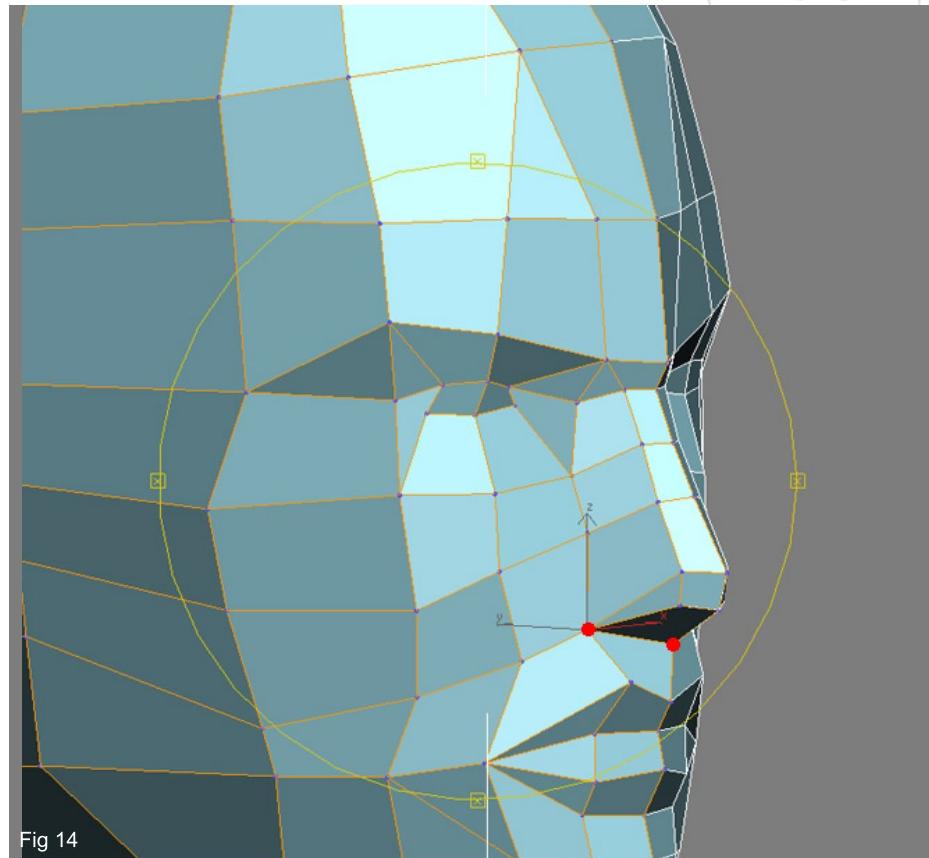
Fig 14
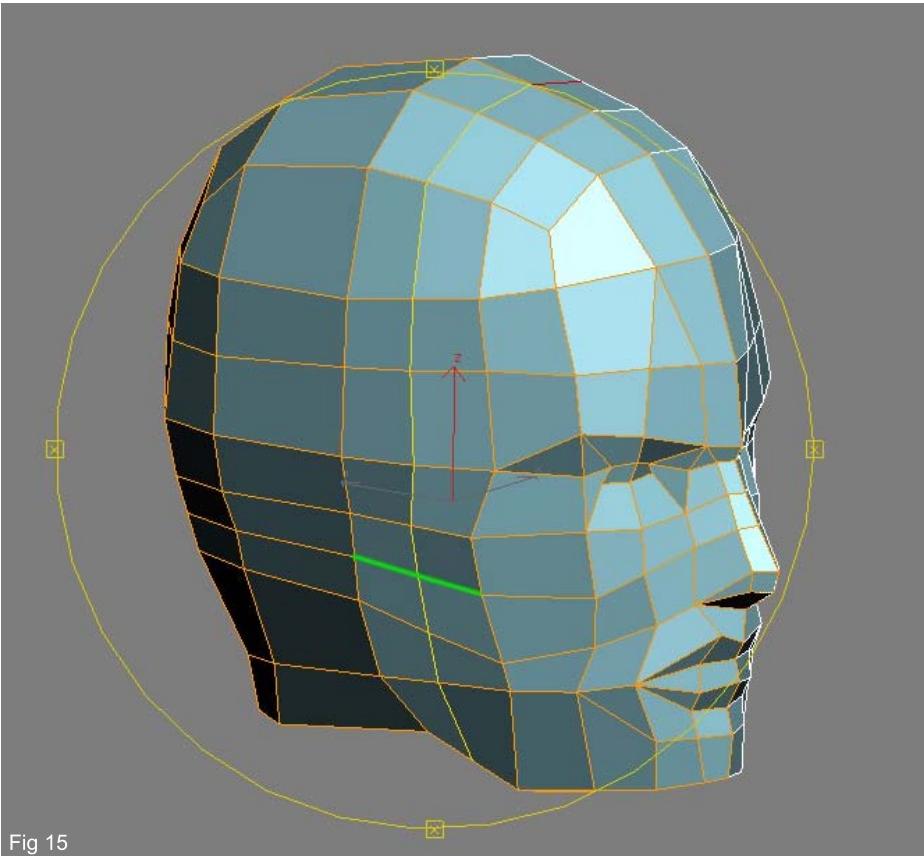
Fig 15

15. Select an edge in line with the green line in Fig15 and perform a "Ring/Connect" once more resulting in another subdivision as shown by the yellow line.
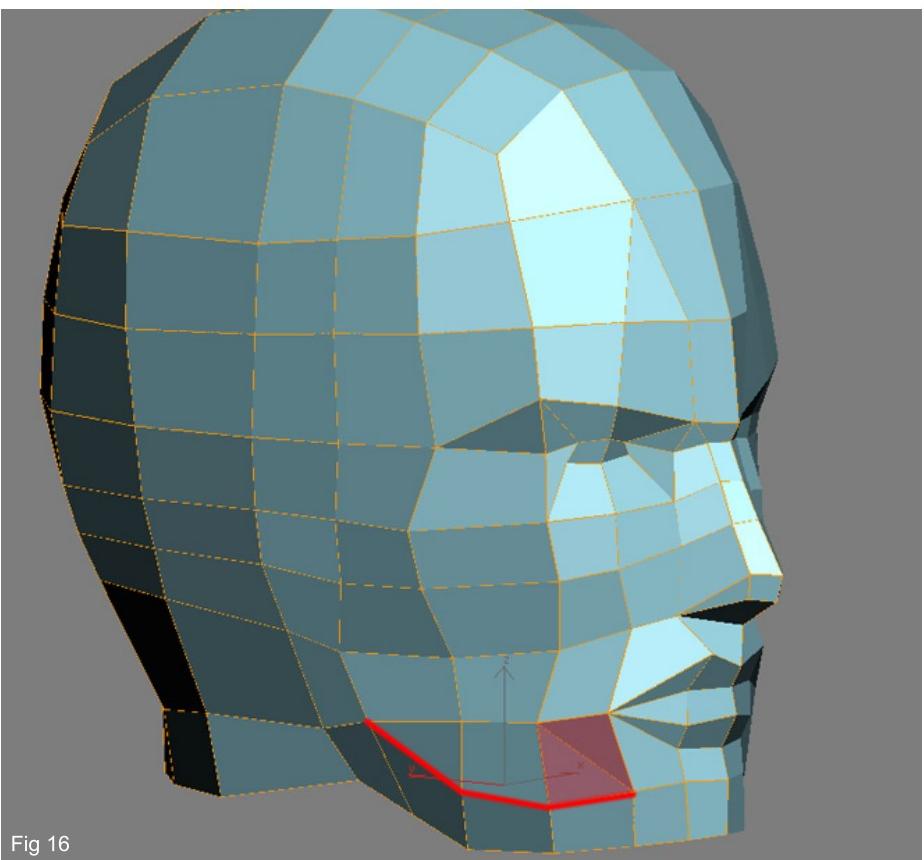
Fig 16

16. To improve the chin a bit more we shall make a further cut to help form the jaw line as shown by the red line in Fig16. You will also notice that the purple poly (the one we originally cut) is made up of two triangles. We can delete this and create a quad in its place using the "Create" tool in sub-object poly mode. This will leave only the one further back on this section of the jaw.

17. To remedy the very flat underside of the chin we shall now make a further cut across from the vert in the middle (shown in red in Fig17). The extra verts can now be pulled downward to form a more rounded profile and the the one left of the center can be welded to the central one to reduce the poly count.
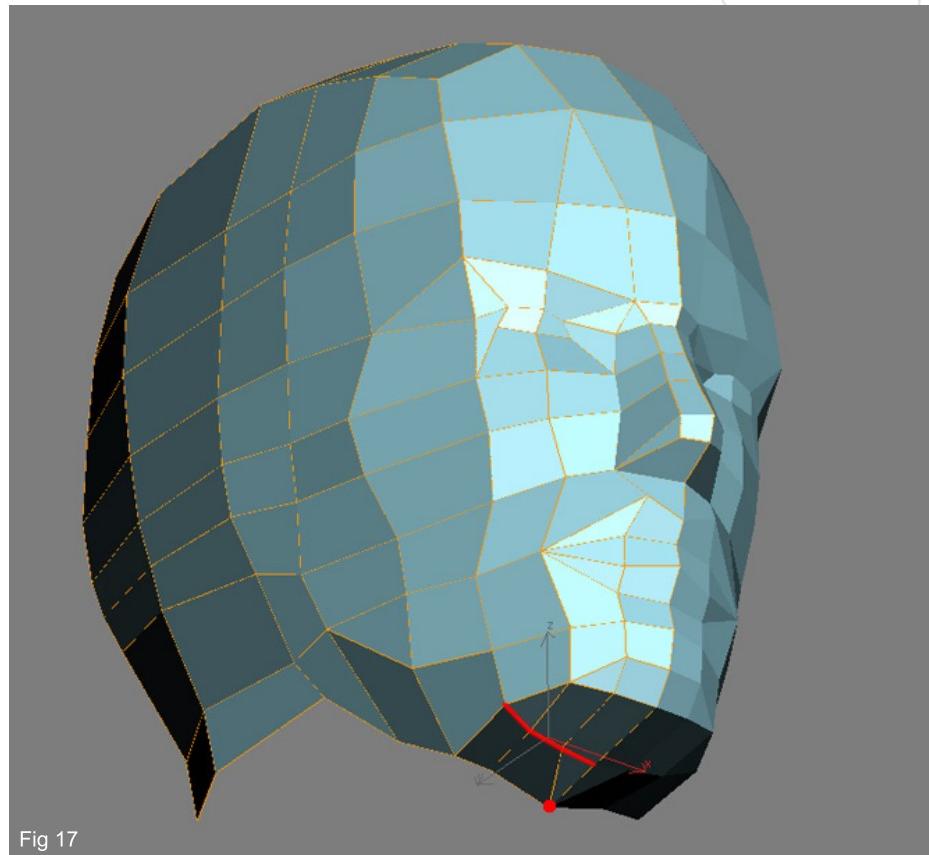
Fig 17

18. To economise futher weld two more verts to the outside edge as shown by the red dots in Fig18. With this complete it is now time to create the ears so start by moving the verts into positions that resemble a rough shape as seen by the red outline.
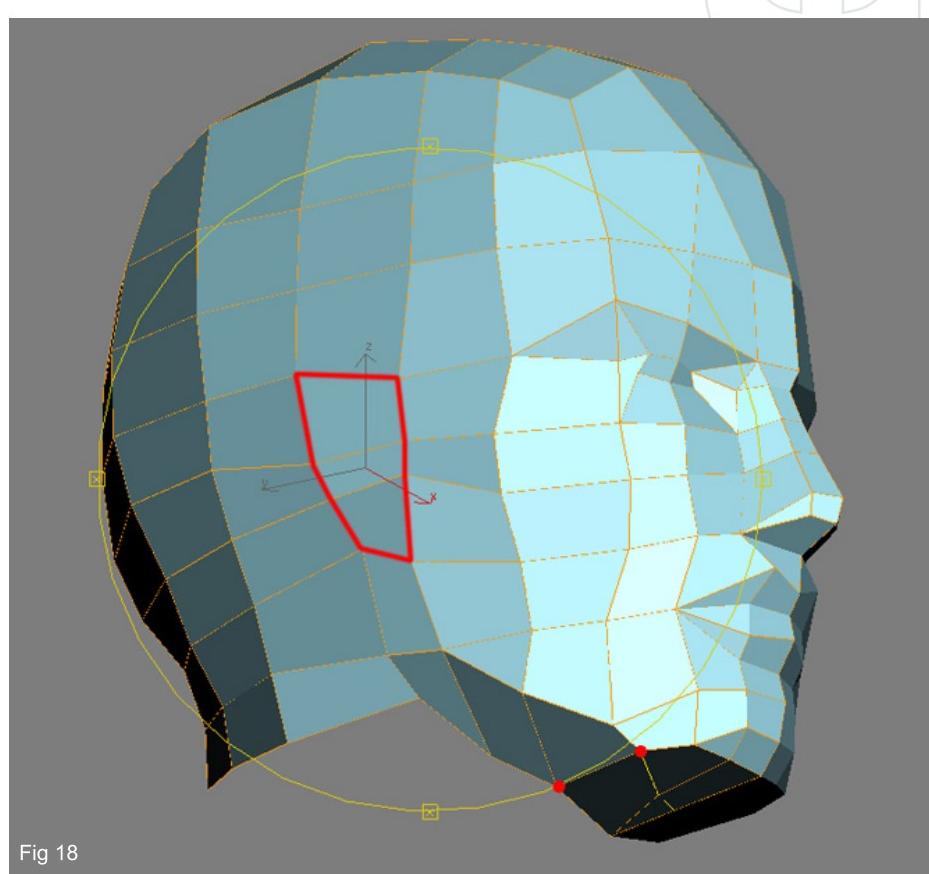
Fig 18
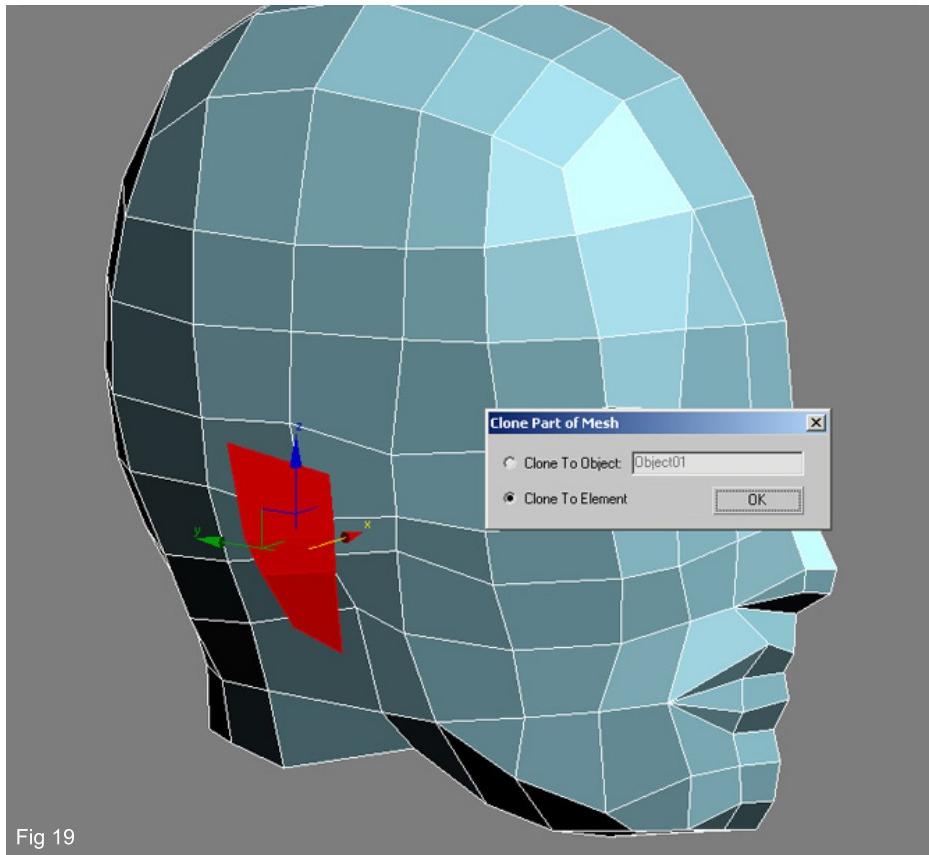
Fig 19

19. Select the three poly's that make up the ear shape and hold down shift and drag the selection outwards. This will create a copy and bring up a "Clone" dialogue box – select the clone to element radio button and hit OK (Fig19). This will keep the new polygons as part of the head and not as a separate object.
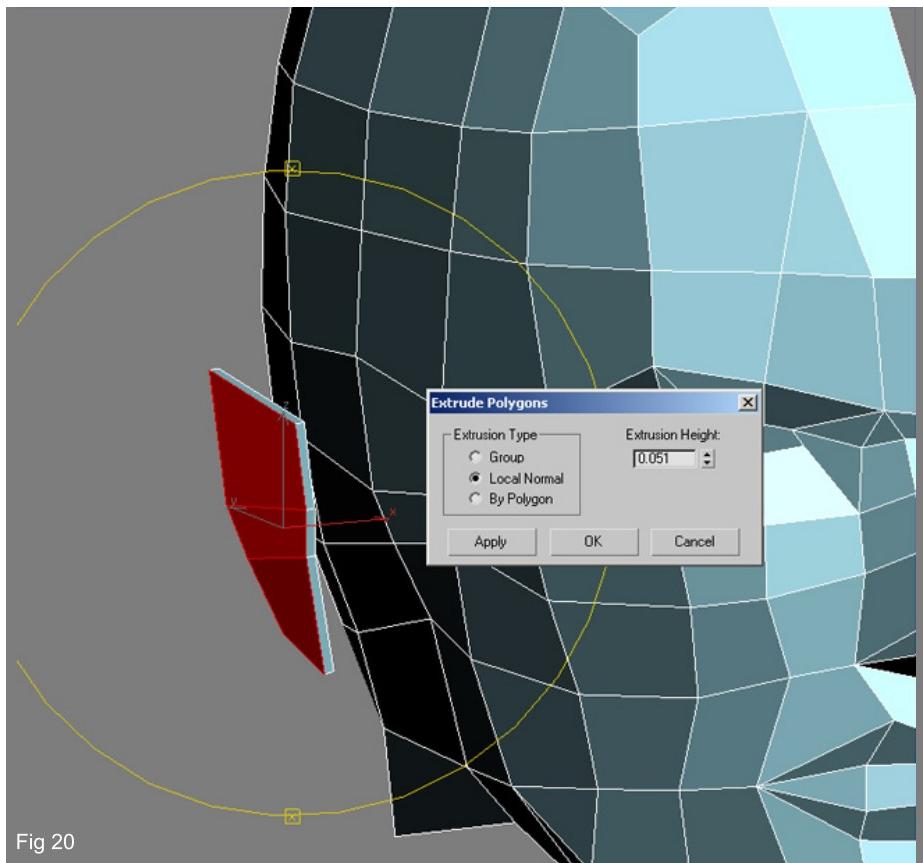
Fig 20

20. With these poly's still selected in sub-object mode click on "Extrude" and give the ear some volume by an amount similar to that seen in Fig20.

21. We now have a rough ear shape but you will notice that on the opposite side there is a hole. To fix this, copy the same selected faces using the same technique we have just used and rotate them around 180 degrees. Now all we need to do is attach them to the other side. Select the 3D Snaps tool on the toolbar (highlighted in yellow –top of Fig21), right click on it and tick vertex under the snaps settings. Now select the vertices on the new faces and drag over to the corresponding ones on the ear to patch up the hole indicated by the green dots. With these verts now in place select all the verts on the ear and click on the little tab next to "Weld" in the modify panel. In the dialogue box alter the threshold to 0.001. You will notice that we have a discrepancy of 8 between the before and after – this corresponds to the 8 verts that we have snapped to the other 8. We can only see 8 but there are in fact 16 separate ones and so by hitting OK we are welding this 16 into 8 and so reducing the count from 161 to 153. In other words if two verts occupy the same space they may as well be one.

22. We can now attach the ear to the side of the head using the same technique by first moving it into position, snapping the verts together and then welding them up. To give the ear a better shape scale the outward faces down a little and then add in a vertical subdivision using the "Ring/Connect" tools and move the extra verts to form more of a curve to the outside (Fig22).
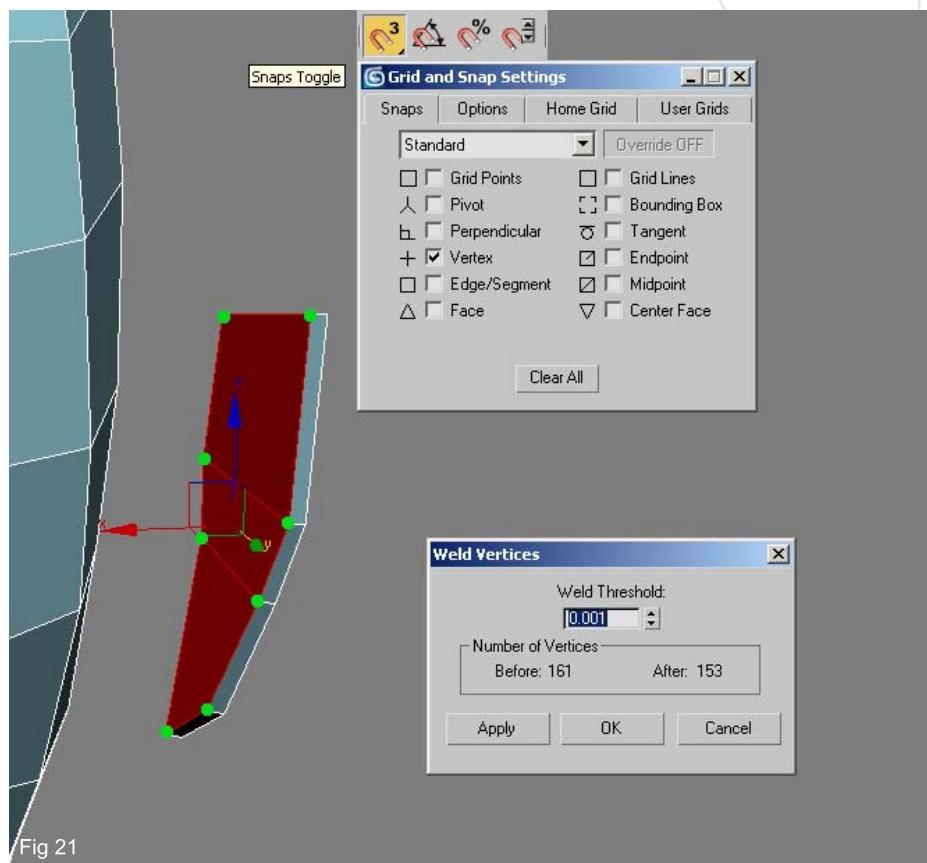
Fig 21
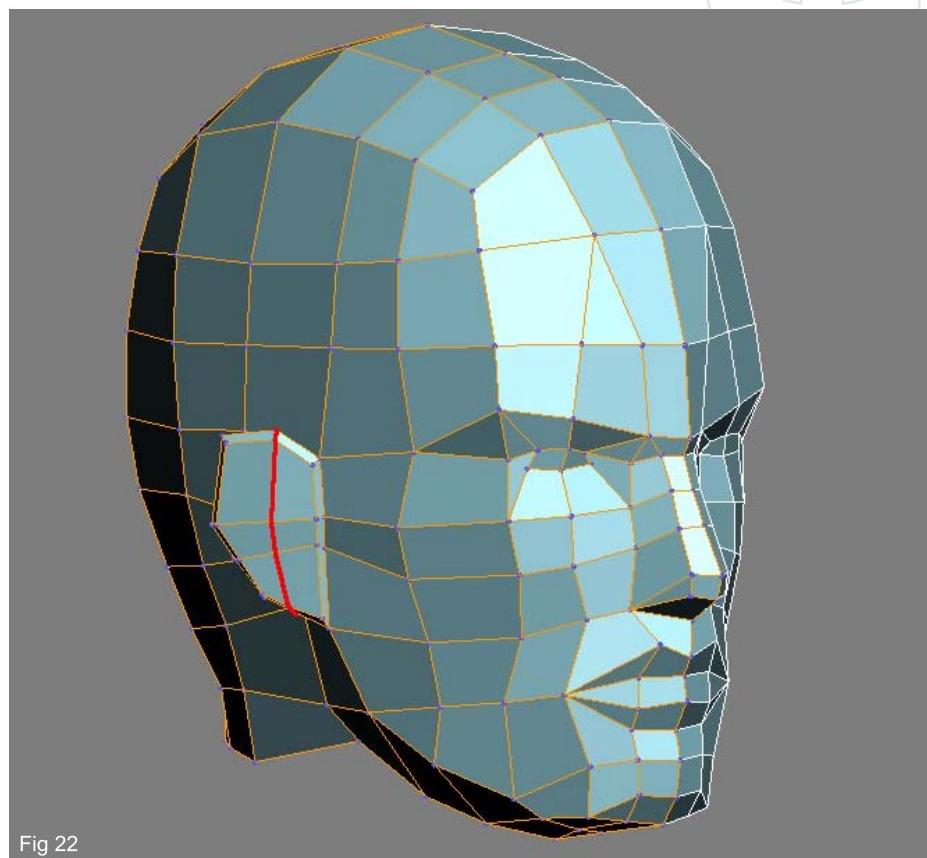
Fig 22
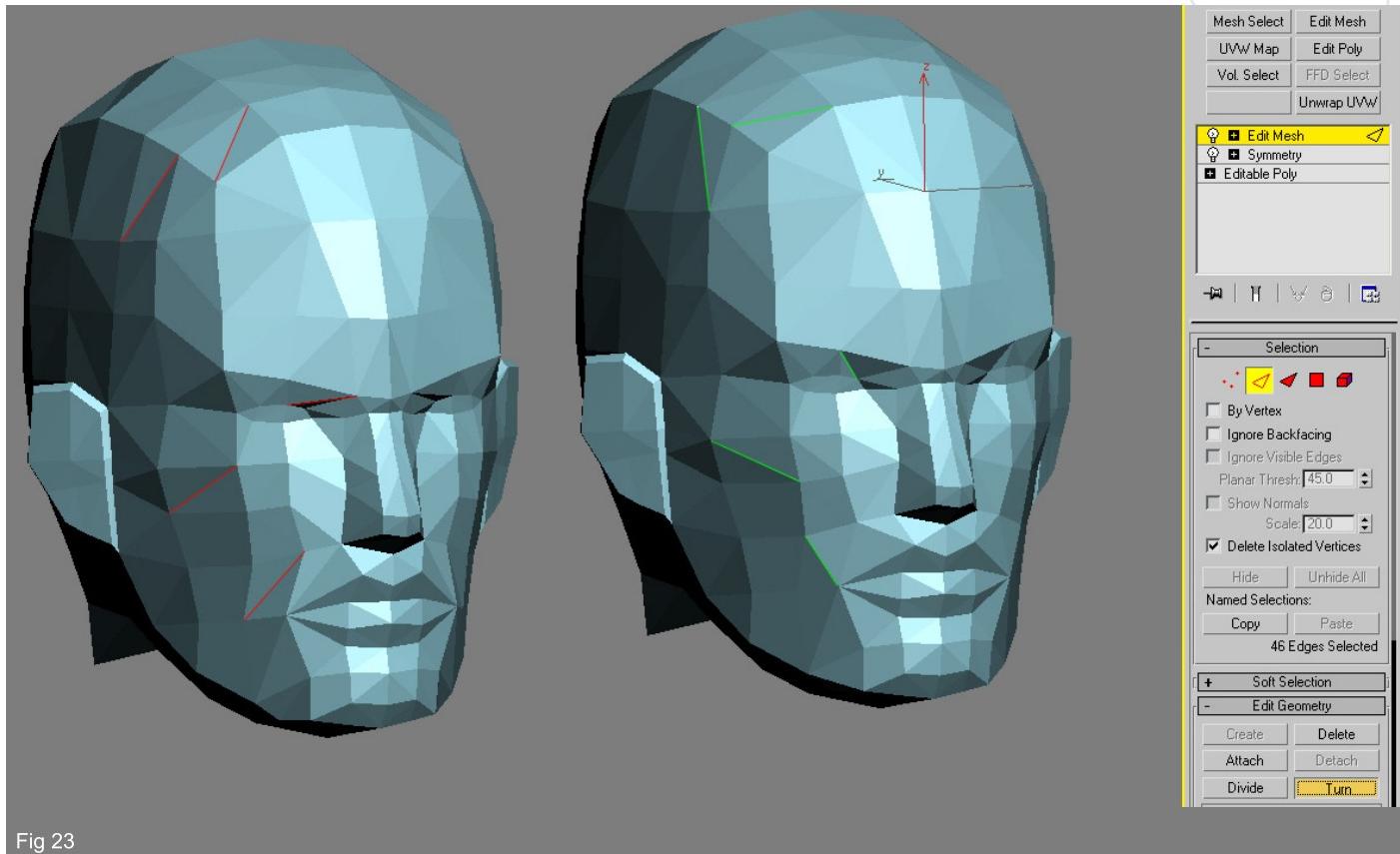
Fig 23
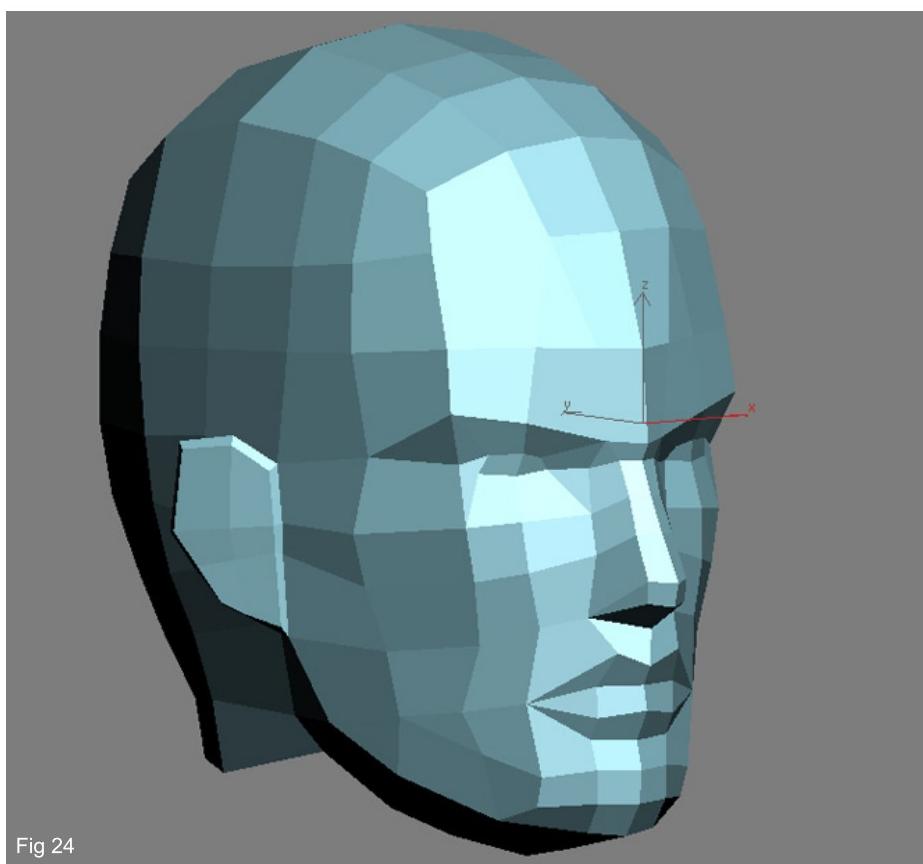
Fig 24

23. We are almost there now! Add an Edit Mesh modifier on top of the stack and then go into sub-object edge mode as seen on the right in Fig23. Select "Turn" and then start to swap the direction in which some edges traverse certain polygons by clicking on them. You can see in the image where edges in red have been turned to follow a more suitable line (shown in green on the right). In this way we can create better contours across our mesh and make sure the numerous planes read more accurately too.

24. In Fig24 we can see the final version of our head. There are a few verts here and there that could be tweaked somewhat to refine the shape but we have a reasonable head to build on. It is important with low-ply models that we have smooth transitions between polygons so that we conceal as much as possible the low level of detail. Hopefully you will have learnt enough techniques to go on and improve upon my model.

Top
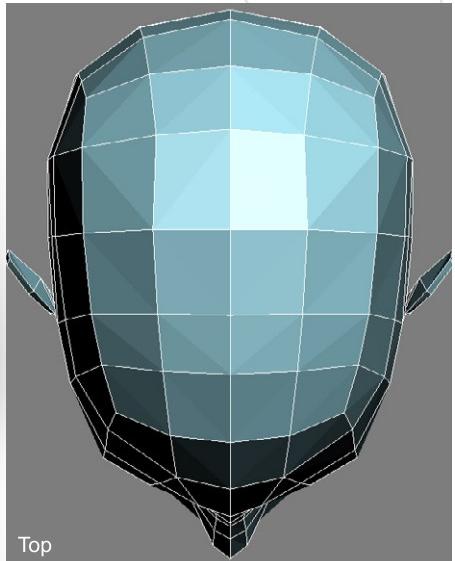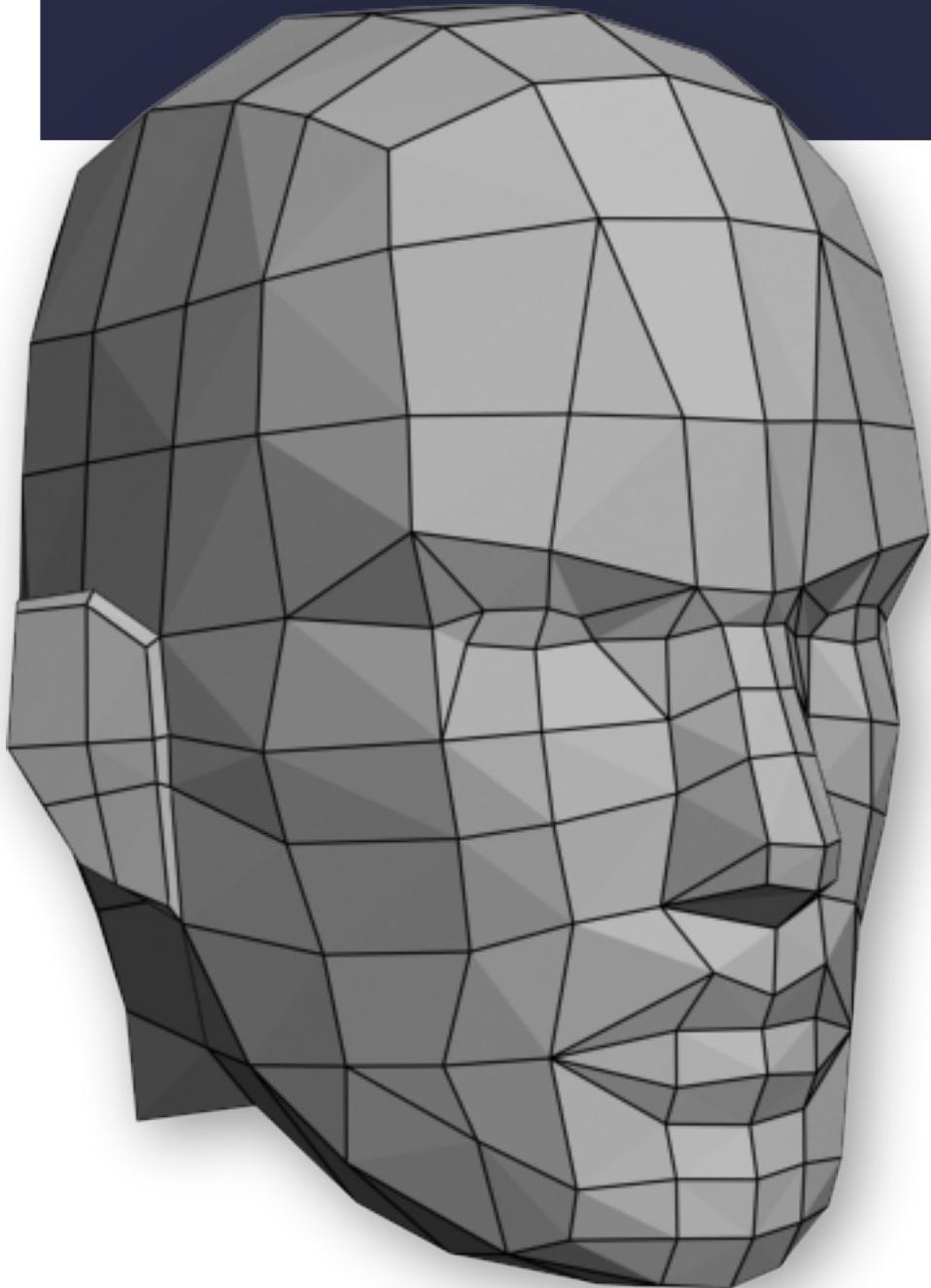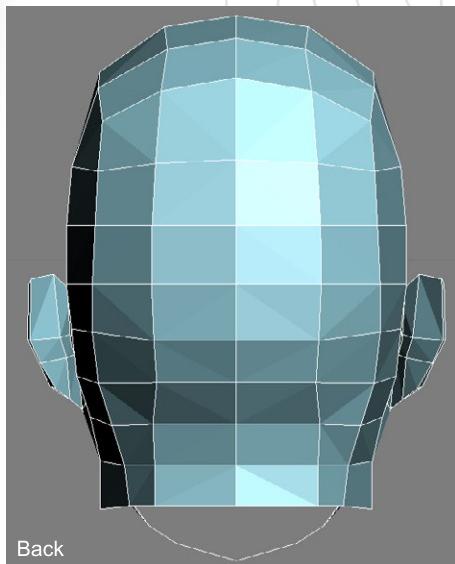
Back
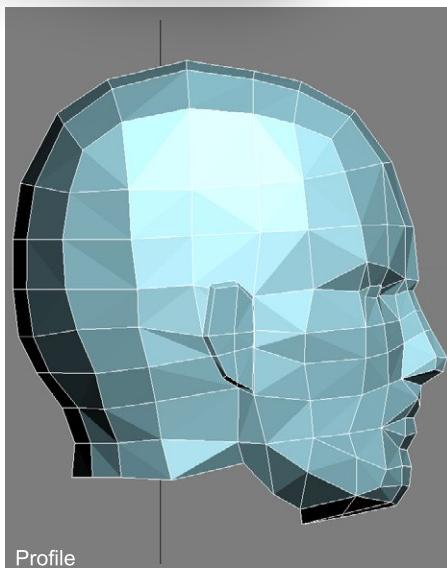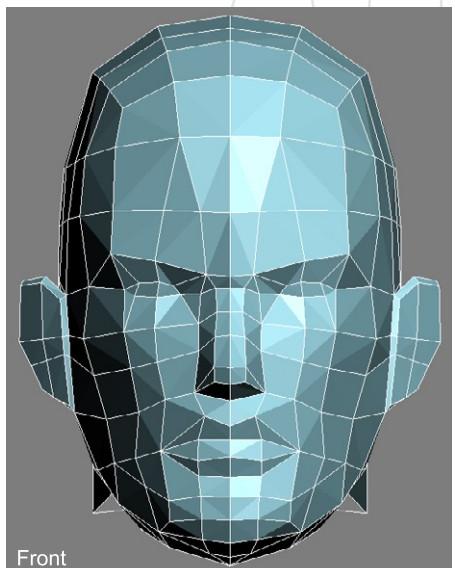
Here are some progress shots from the viewports, and a render of the flat shaded with wireframe over. Next month we will continue by building the torso.

Tutorial By :
Richard Tilbury
rich@3dtotal.com

The 'Swordmaster'
character was originally created by
Seong-wha Jeong
www.xcloud.net
sephiloss@naver.com

Profile

Front

The Swordmaster

CINEMA 4D

Is our new precise, step by step tutorial for highly polished, low polygon game character with detailed texturing for real-time rendering. We have had the tutorial created for the 5 major 3d applications, but even if you are not a user of one of them, the principles should be easily followed in nearly all other 3d applications. Over the next 8 months we will outline in detail the process for creating the 'Swordmaster' you see on the left. The schedule for the different parts of the tutorial is as follows:

Enjoy ...

Part 1
Modelling the head

Introduction

Welcome to the first of an ongoing tutorial which will run over the next eight issues and provide a step by step guide to building a low poly character based upon a model by Seong-Wha Jeong. Over the next six months we will be covering how to build, map/unwrap and texture the character based upon the original. As the original model is low poly and tailored towards a game environment the mesh is not made entirely of quads and so we shall also be making use of a few "tri's" in places to minimize the mesh density. In this first section we will start by creating a simple cube and then moulding it into the final head shape using the editable poly tools.

1. The first step is to create a cube with 4 length, width and height segments as shown on the right in Fig 01. Make it Editable, so right click on the cube and select "Make Editable". You will notice that the UVW Tag will appear nearby to Phong Tag in the Object Browser, these are default co-ordinates that cinema assigns to the object. We will assign our coordinates to the object later, so you may delete the tag.

2. With our editable cube we can now begin shaping it at the sub-object level, points, edges, polygons. Select the "Point Tool" and start moving vertices in the right / left viewport first to get the rough profile shape. Use the Rectangle Selection, be sure to disable "Only Select Visible Elements" in the rectangle selection's options so that you select all the vertexes across the mesh. In this way we can keep our mesh symmetrical on both sides. (Fig 02). Work in a profile view and move verts into reasonable shape then switch to the front view and do the same.


Fig 01

Fig 02
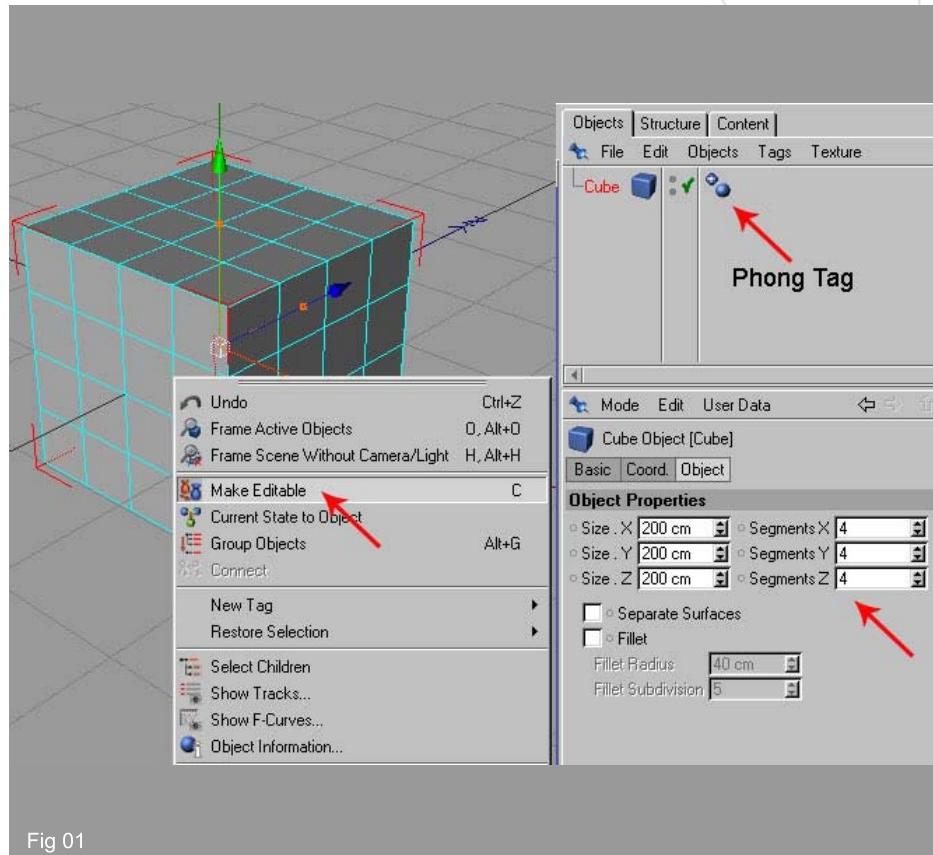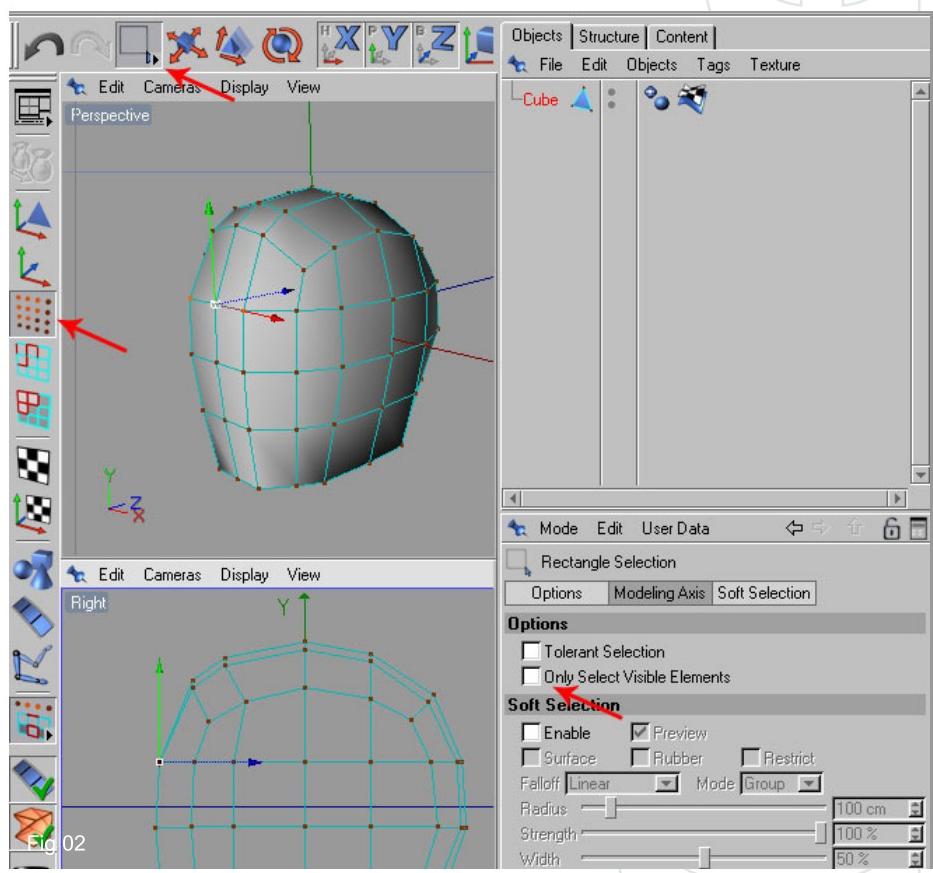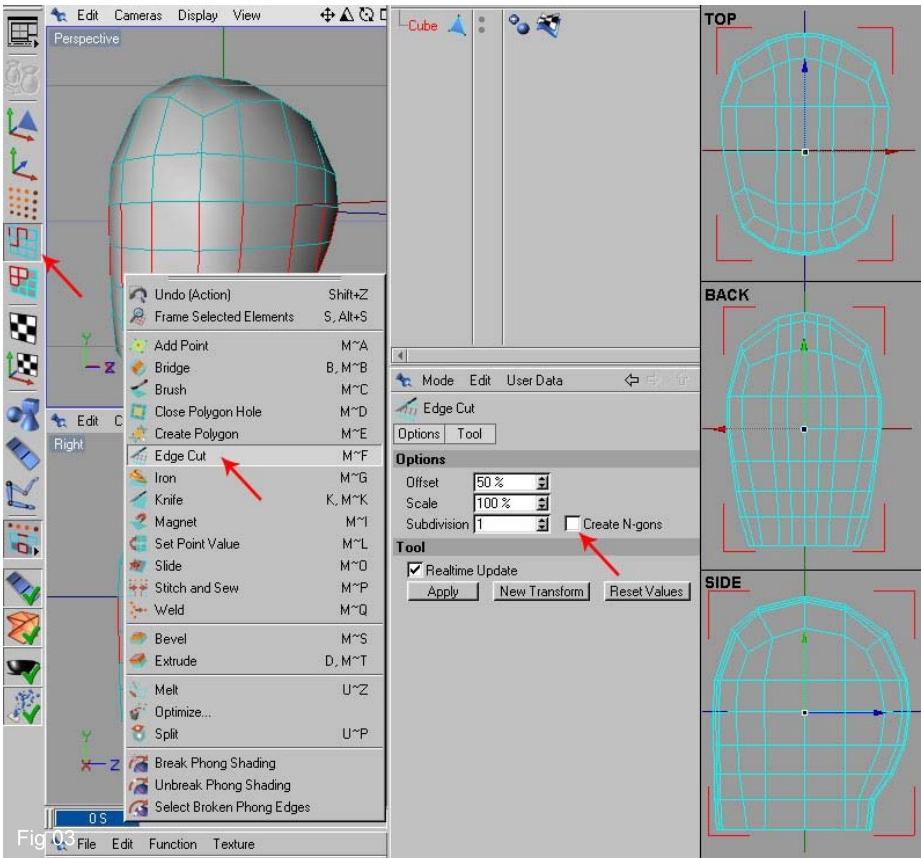
Fig 03

3. Once you have shaped the existing geometry add more subdivisions. Switch in Edge Tool and From Main menu > Selection > Ring Selection. Select the edges like shown, right click and select Edge Cut from dialogue box. In its options disable "Create N-gons". Fig 03. Here you can modify the parameters of the cut (offset, scale, subdivision), in this case choose just one subdivision. Much of the modelling process will involve this procedure after which the new verts are then manipulated into better positions. You can see the various views of the mesh at this stage on the right.
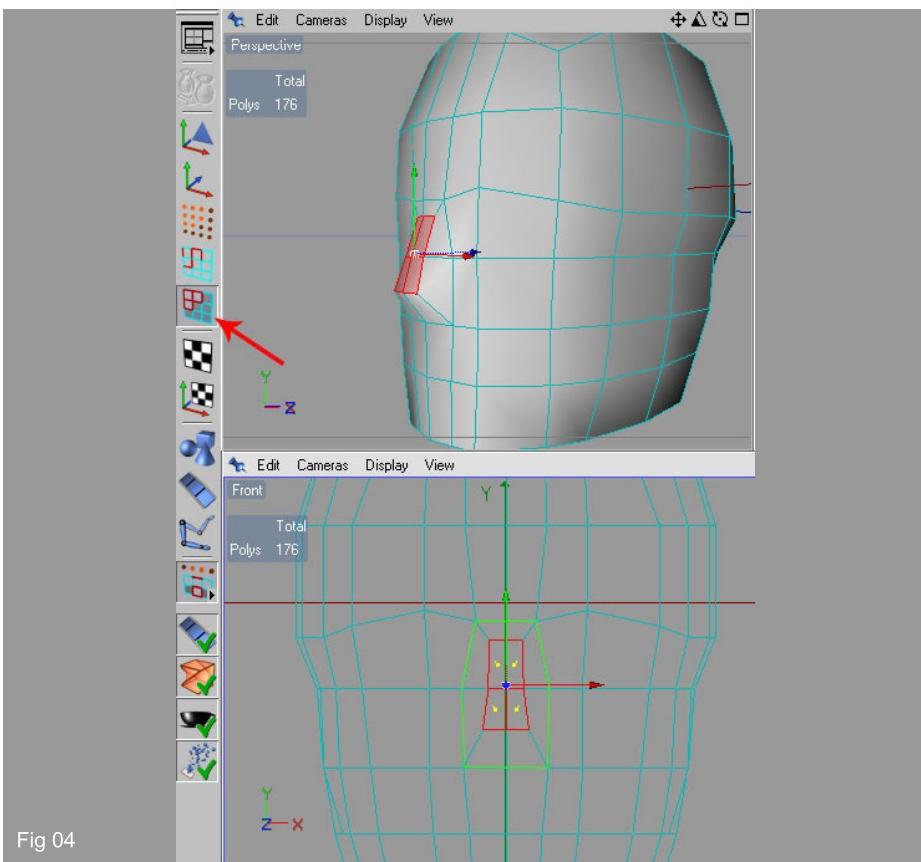
Fig 04

4. It's now time to add some of the features. Select the two central polygons (marked in green), right click and select "Bevel" from the menu. Adjust the points as shown in Fig 04.

5. For the eyes select the polygons marked in green, then right click and select "Extrude Inner" from menu. Be sure to keep "Preserve Groups" enabled otherwise each polygon will be extruded individually, something we wish to avoid. Fig. 05
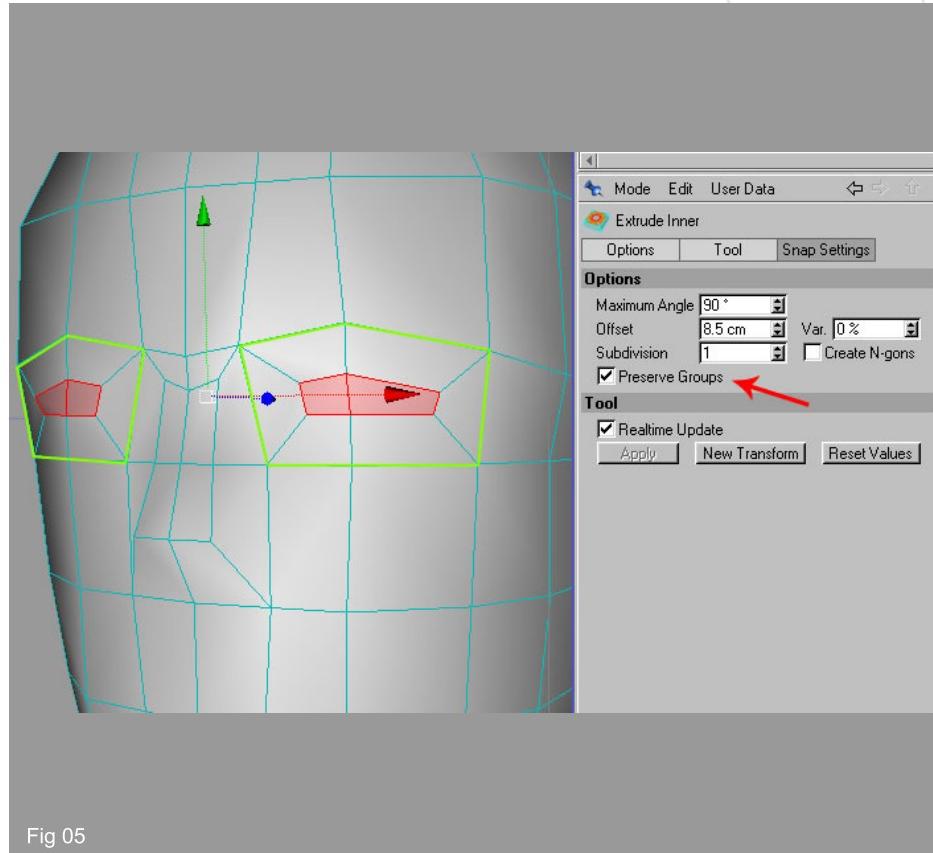
Fig 05

6. The next step is to make the mouth. Select the edges like shown and cut them with "Edge Cut" setting the subdivision = 1 for the upper edges and subdivision = 2 for the lower edges. The cut at the bottom is not like we wished to, so right click, select "Knife" tool from menu and connect the vertices. Then select the polygons like shown on the bottom left and eliminate the triangulation, so right click and select "Untriangulate". In the dialogue box disable the "Evaluate Angle" option. Move the points into positions to form a mouth shape like shown on the bottom right.
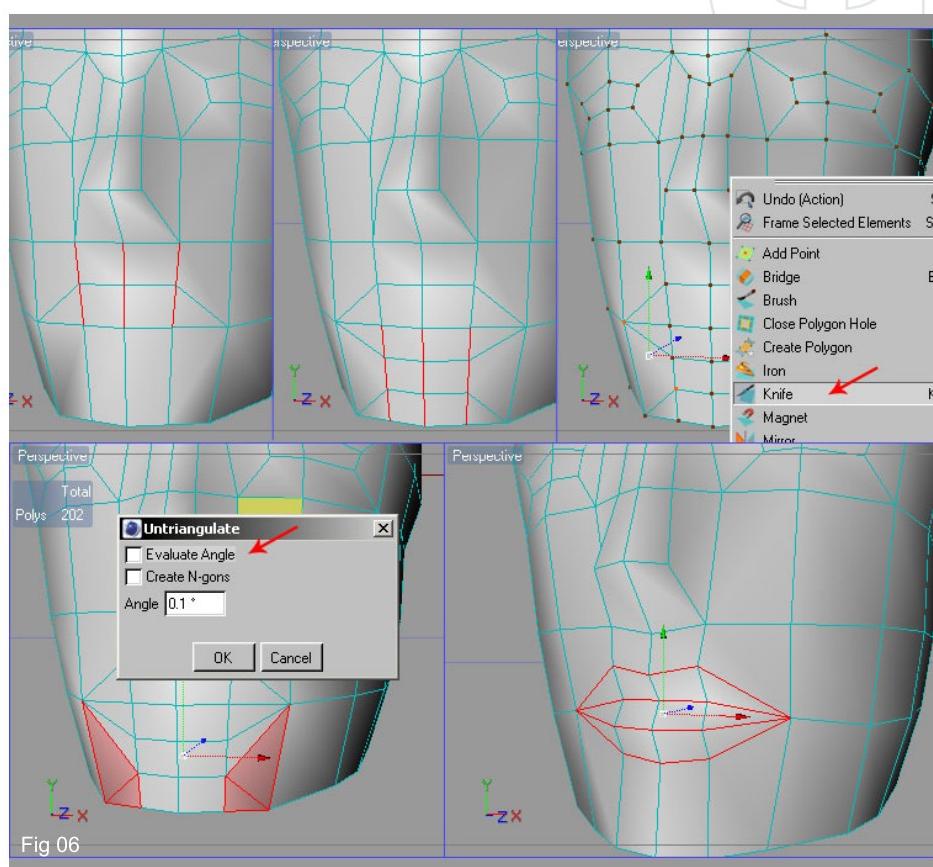
Fig 06
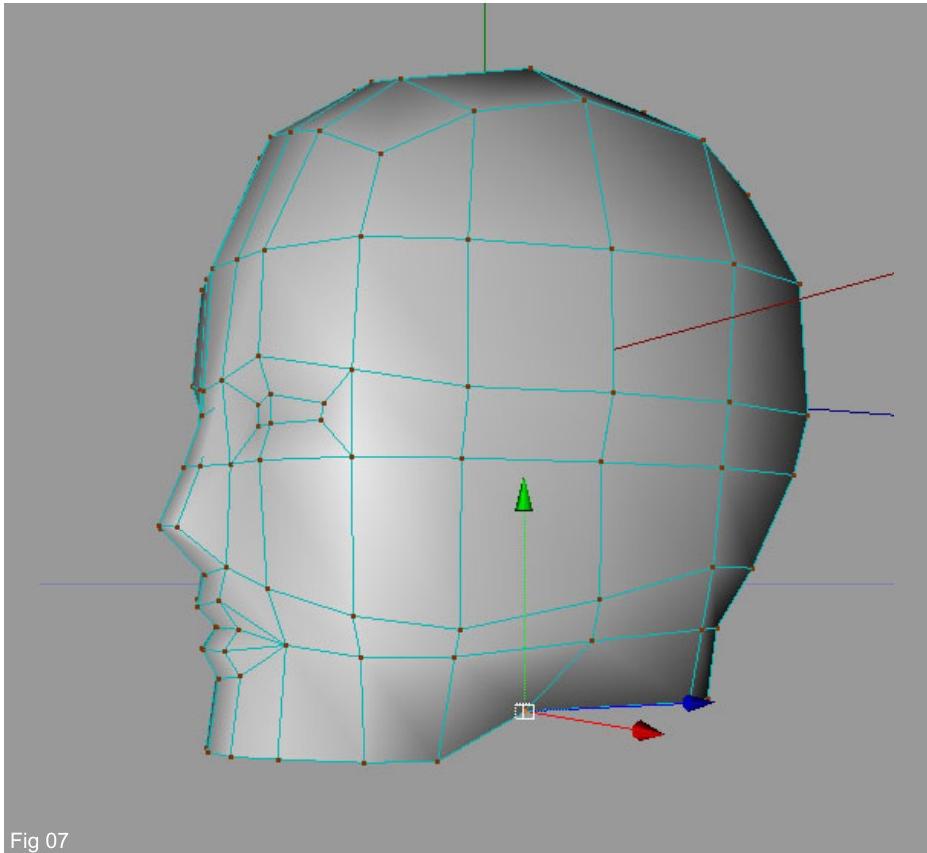
Fig 07

7. The features are now beginning to form, albeit in a rather crude way but there is still no evidence of a chin so pull up some of the lower verts to alleviate this (Fig 07).
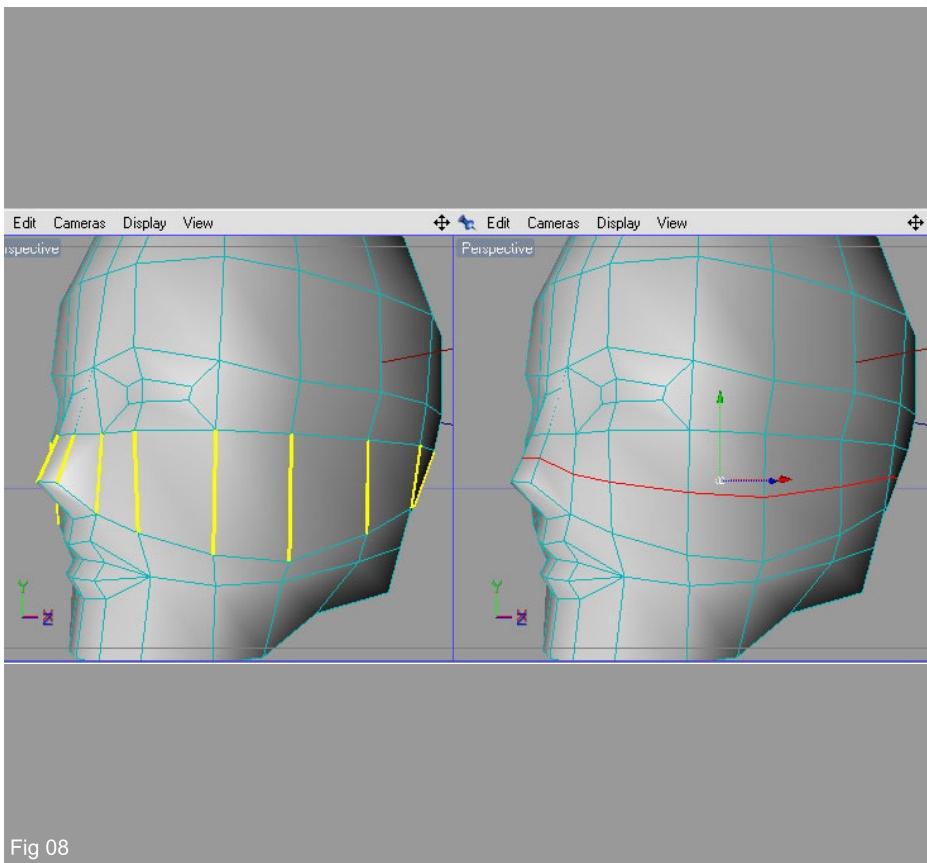
Fig 08

8. Add now a cut as shown in Fig 08 using the "Ring Selection" tool. This will refine the cheek bone and the nose shape.

9. Now that we have a reasonable amount of detail it is time to delete half of our mesh and apply the Symmetry object so that we can work on just one half of the model and see the results mirrored in a duplicate. In this way we can ensure that the head is the same either side of the central line but reduce the number of polygons that need manipulating. Use the Rectangle selection to select the right half of the head, making sure 'Only Select Visible Elements' is unchecked. Delete these selected points and apply the Symmetry. Drag the head into Symmetry object. (Fig 09)
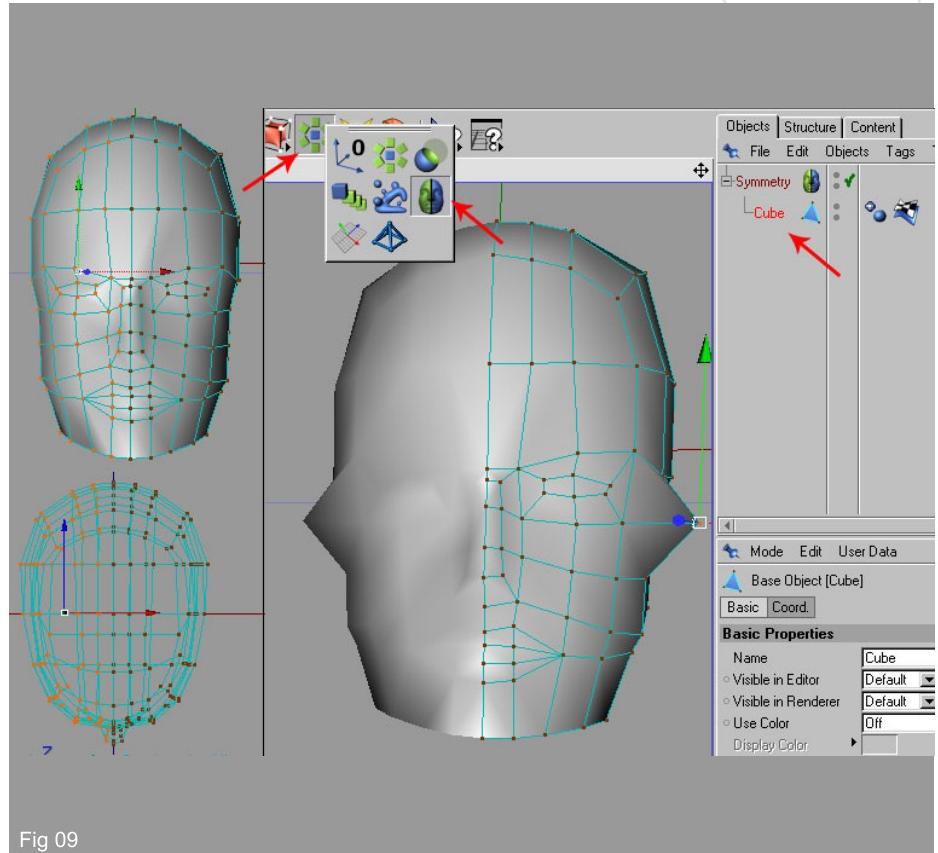
Fig 09

10. Now we are going to define the eye area. Add the edges as shown in fig 10 and use the Knife Tool to connect the vertexes. This will help create a more convincing socket shape for the eye.
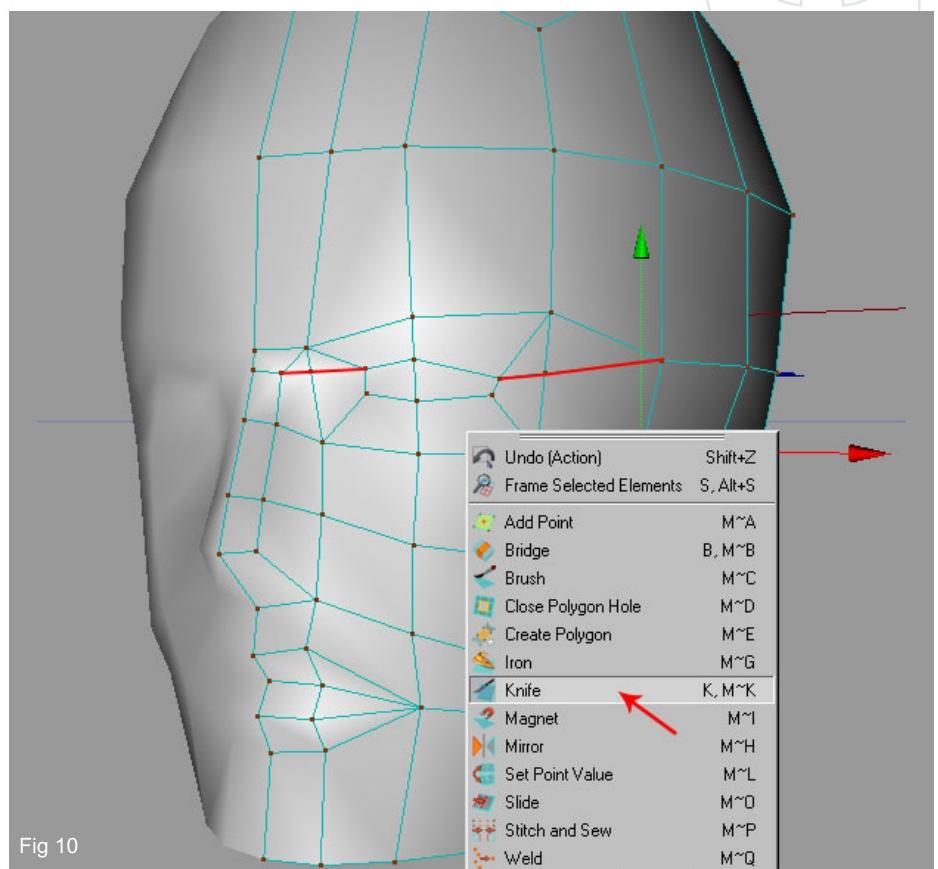
Fig 10
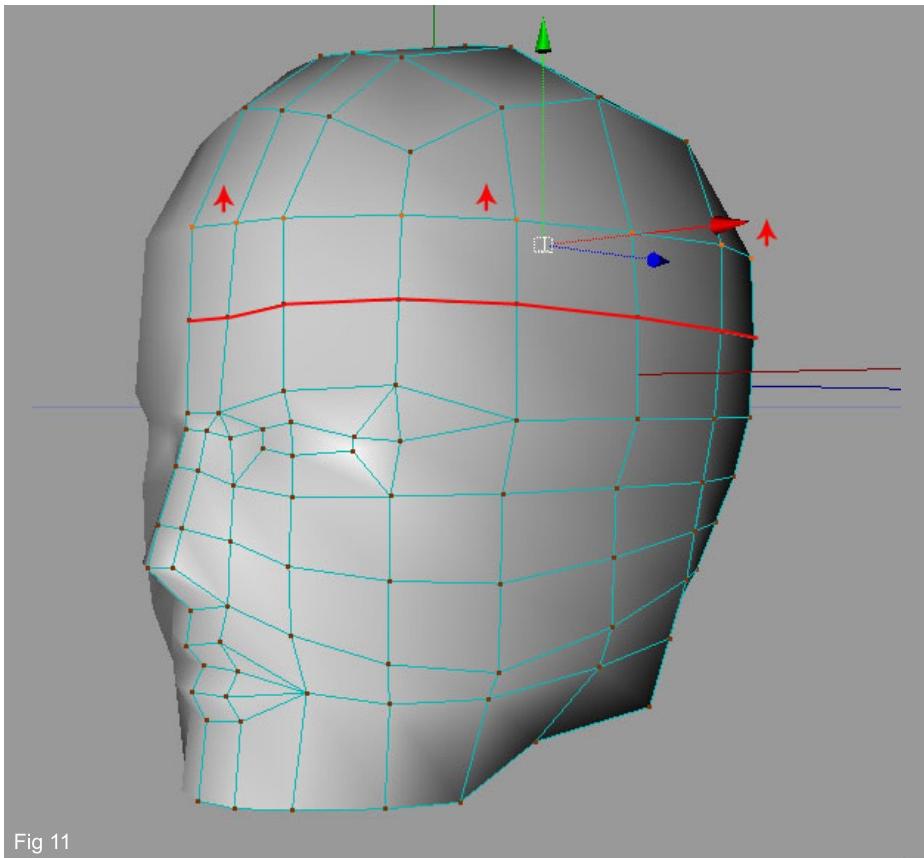
Fig 11

11. Add more detail above the brow. First move the marked points up, then add a cut like shown in fig 11 which will help form a better forehead shape.
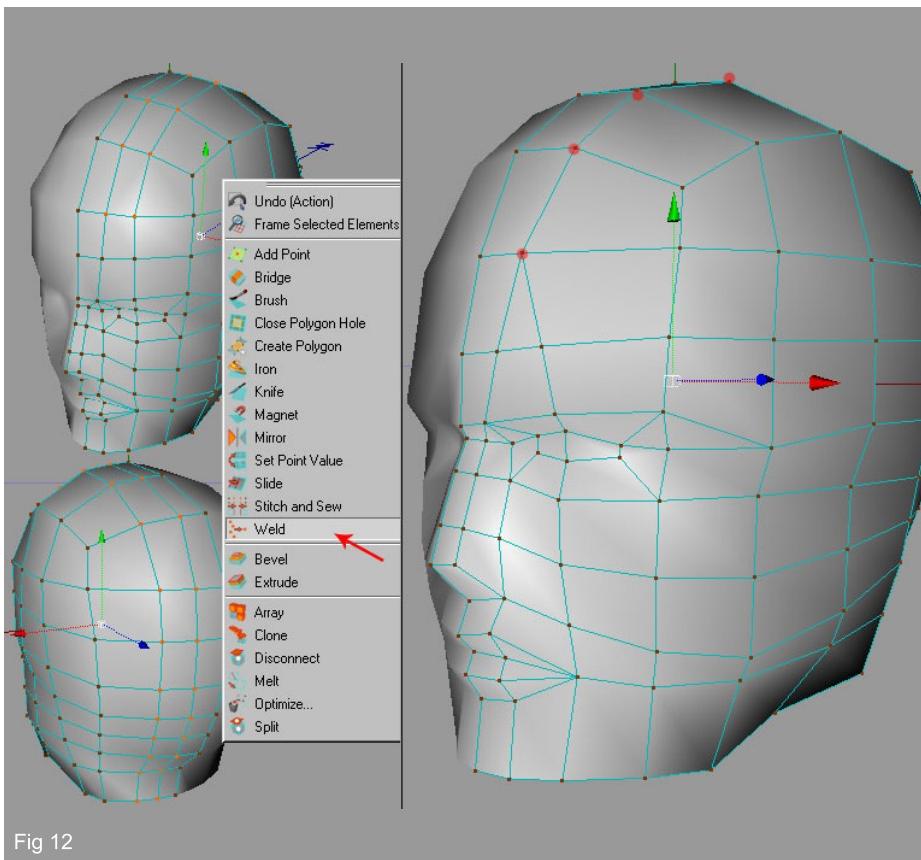
Fig 12

12. As we gradually refine our model we inevitably add more detail but sometimes it is useful in low poly characters to actually remove unnecessary detail that can be supplemented by a texture. At the moment we have six rows of polygons running over the top of the head – more than we really need. We will now weld the marked vertices in fig 12. Select two points each time, right click and choose Weld from menu. Repeat this operation until you get the mesh as shown.

13. We have partially improved the eyes and so should refine the other features. Add the cut as shown in Fig 13 using the Knife Tool to create a better shape to the chin. For the nose select the polygon as shown and bevel it.
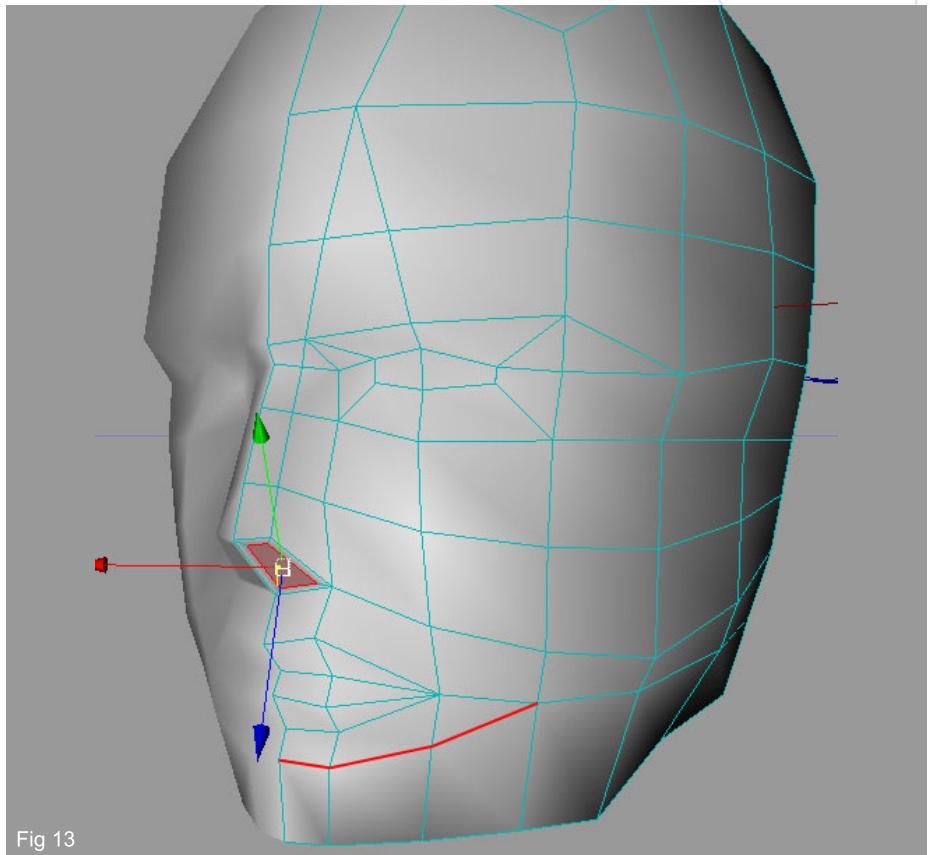
Fig 13

14. Still working on the nose, select the polygon as shown in fig 14 and delete it. Move the points at the coordinates 0 (bottom left) and finally weld the bottom vertices of the nose and adjust the mesh as shown on the right.
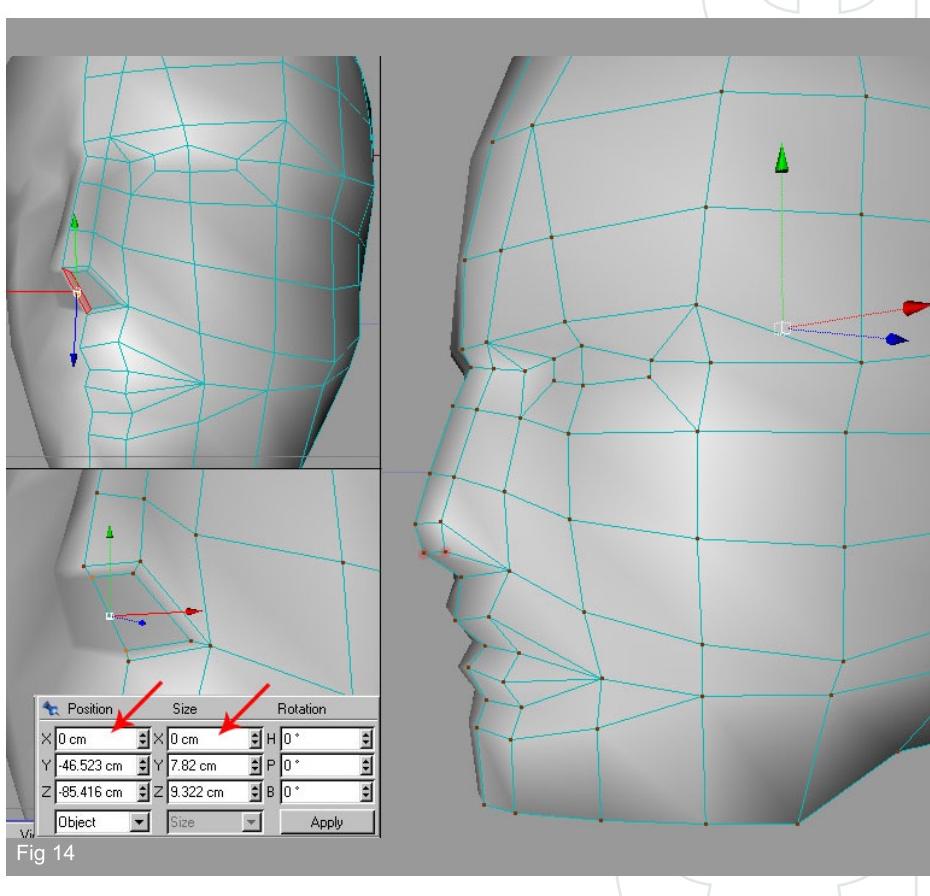
Fig 14
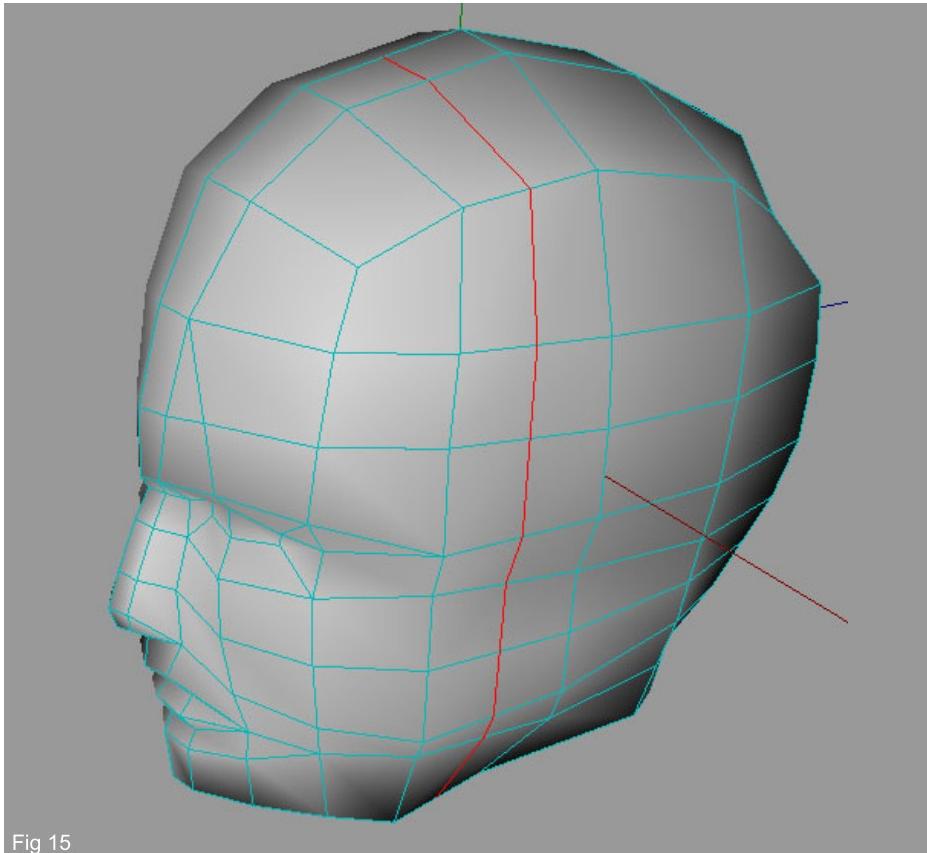
Fig 15

15. Add a new subdivision using "Edge Cut" once more. Fig 15
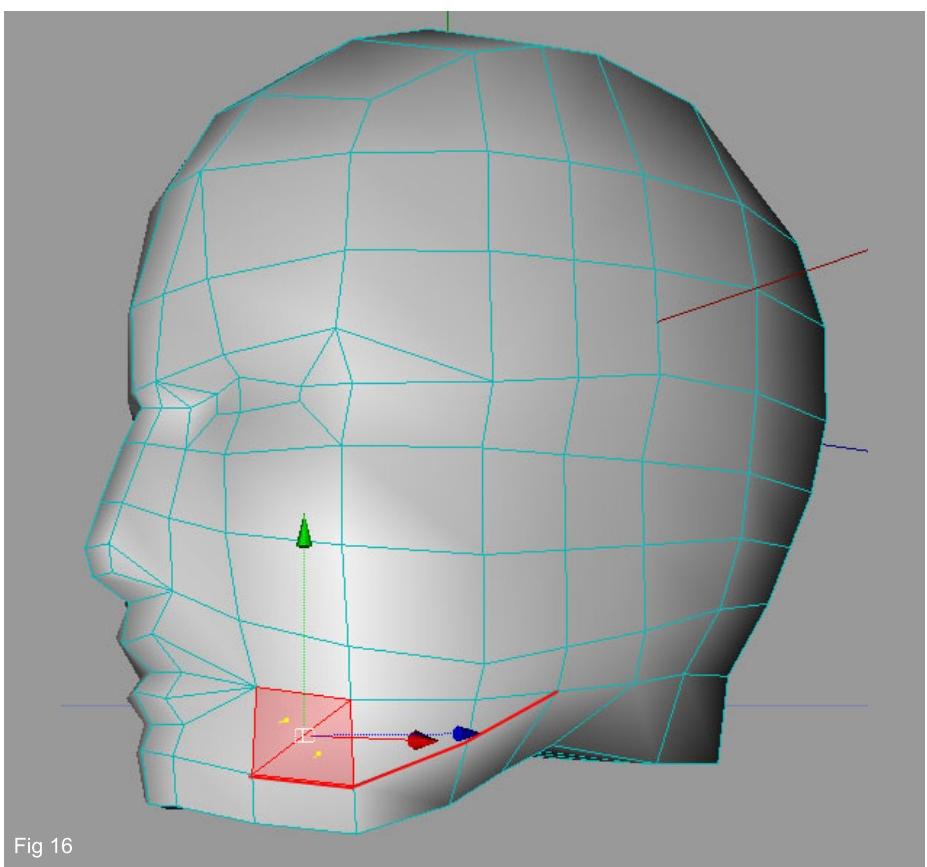
Fig 16

16. To improve the chin a bit more we shall make a further cut to help form the jaw line as shown by the red line in Fig 16. You will also notice that the selected poly (the one we originally cut) is made up of two triangles. We can delete this and create a quad in its place, so right click and choose "Untriangulate" from menu.

17. To remedy the very flat underside of the chin we shall now make a further cut as seen in Fig 17. The extra verts can now be pulled downward to form a more rounded profile and the points on the right can be welded to the central points to reduce the poly count.
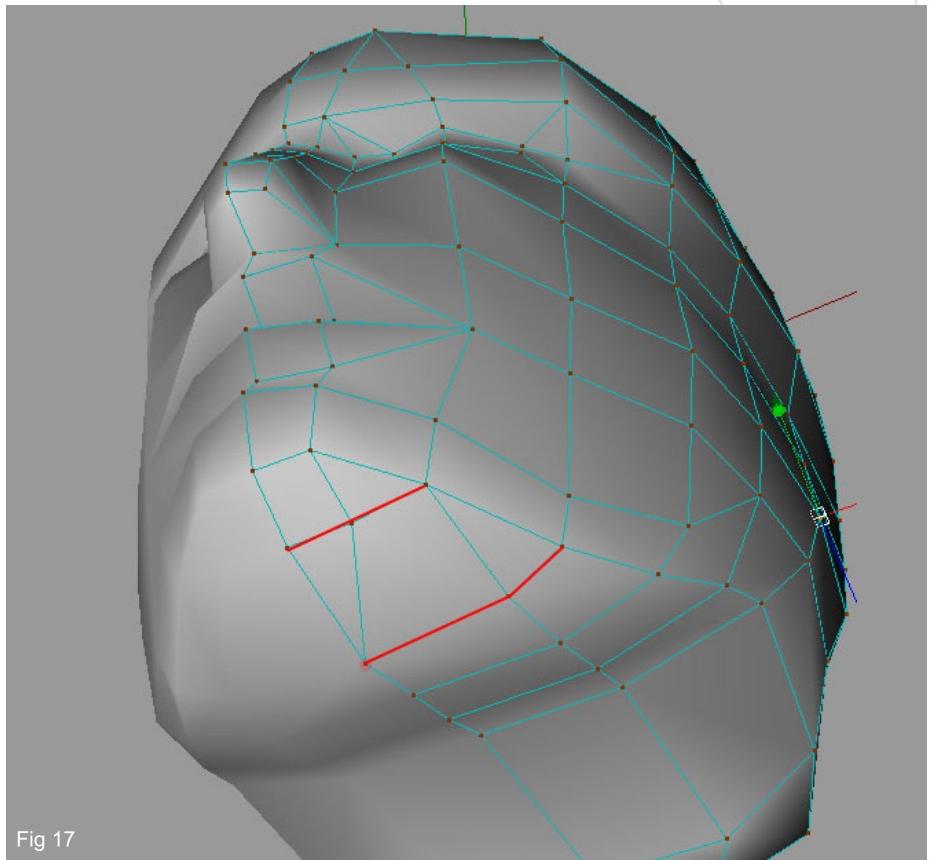
Fig 17

18. To economise further weld two more verts to the outside edge as shown by the red dots in Fig 18 (left). With this complete it is now time to create the ears so start by moving the verts into positions that resemble a rough shape as seen by the red outline.
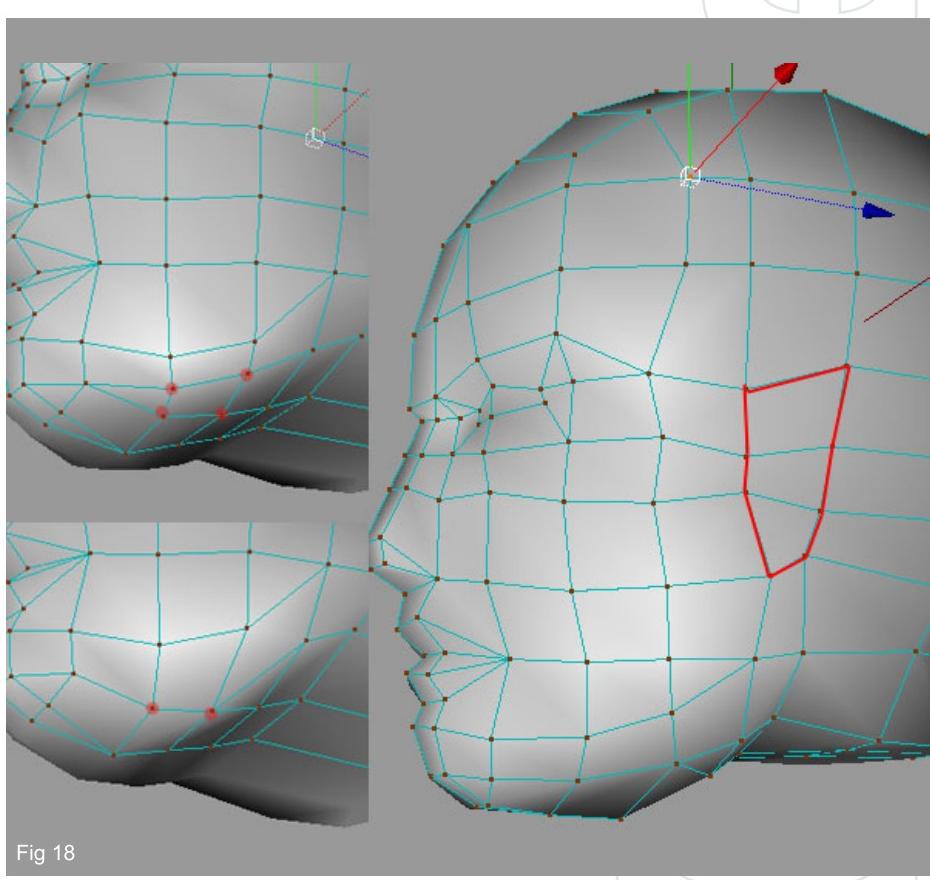
Fig 18

19. Select the three poly's that make up the
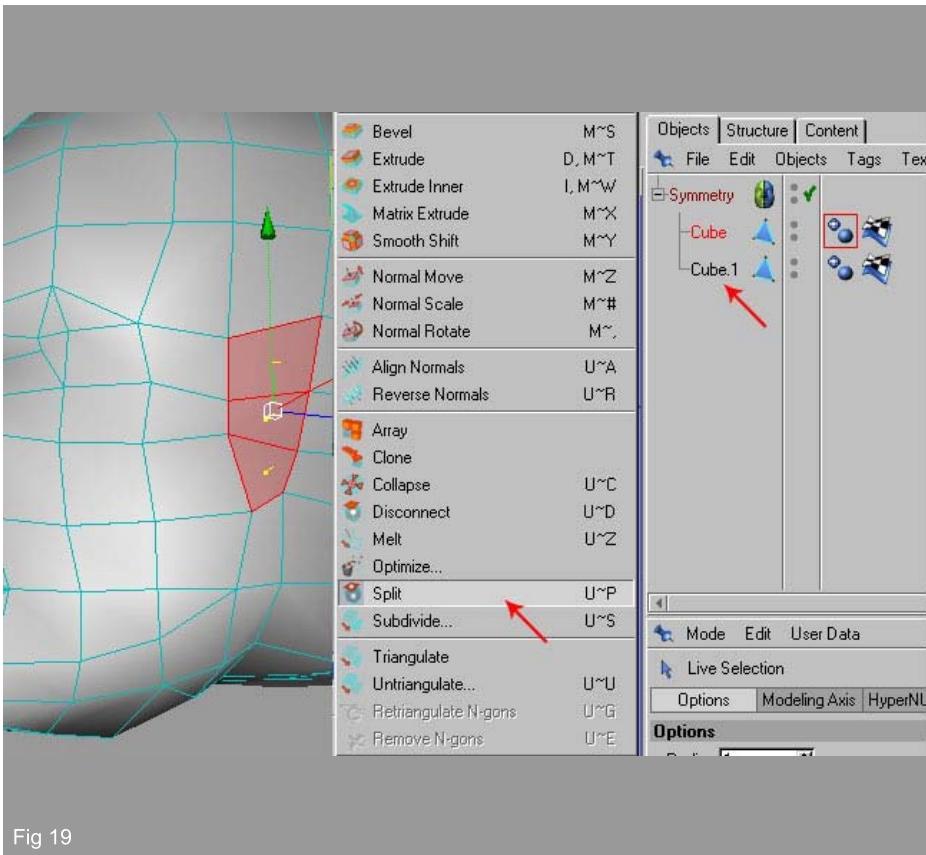
ear shape, right click and choose "Split" from menu. This will create a new object, a copy of the selected polygons. (Fig 19)

Fig 19
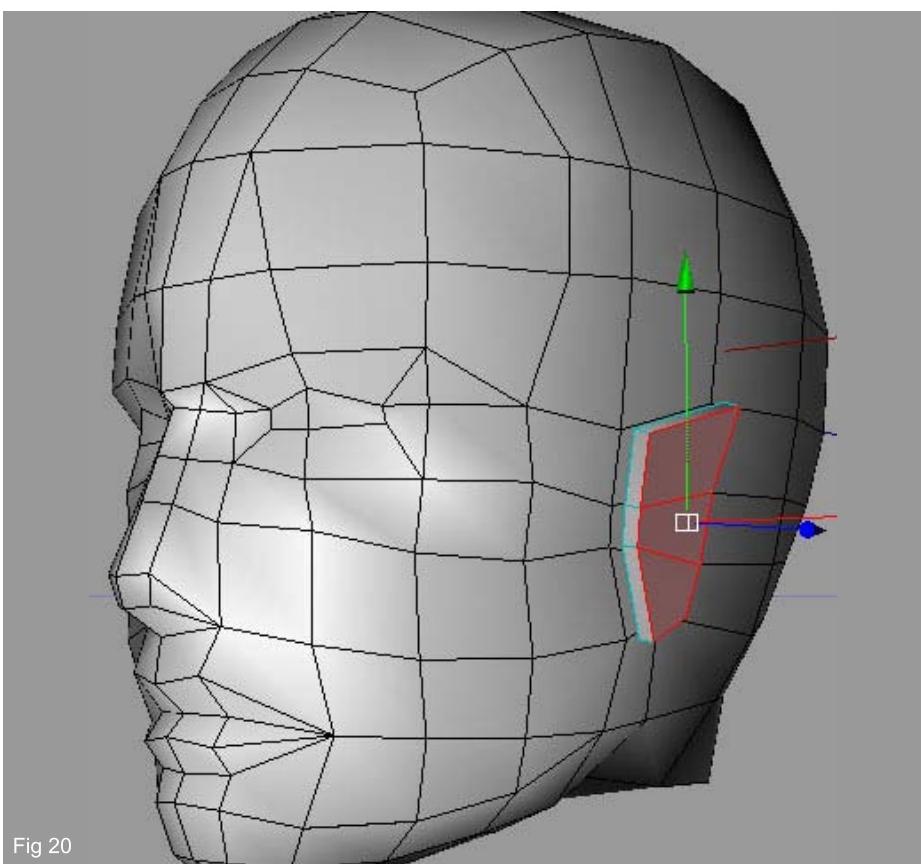
20. Extrude the face of the new object as shown in (Fig 20).

Fig 20

21. Now you will notice, on the other side of the ear there is a hole. To fix this go into vertex mode, right click and choose "Close Polygon Hole" from menu. Then connect the vertices with the Knife tool. (Fig 21).
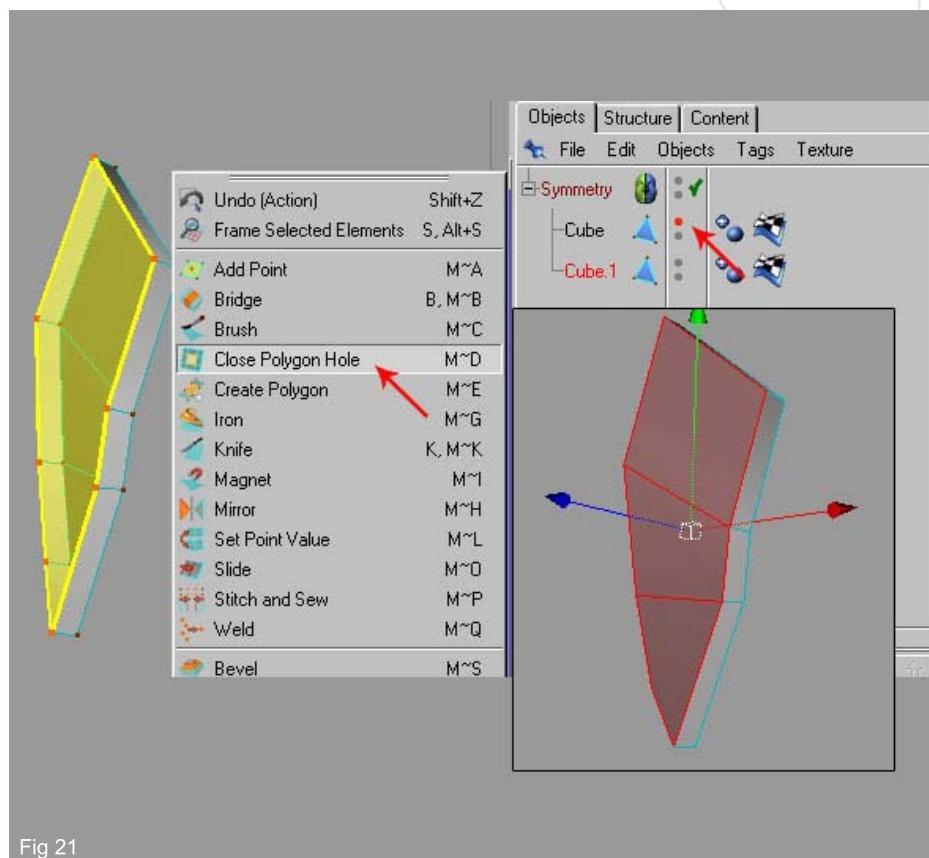
Fig 21

22. To connect the ear to the head, move it into position as shown in Fig 22. Now connect the two objects by selecting them in the Object Manager, right clicking and choosing "Connect" from menu. This will create a new object so delete the previous objects and drag the new one in the Symmetry. Now weld the vertexes as shown on the bottom of the image. To give the ear a better shape scale the outward faces down a little and then add in a vertical subdivision using the "Ring Selection" tools and move the extra verts to form more of a curve to the outside.
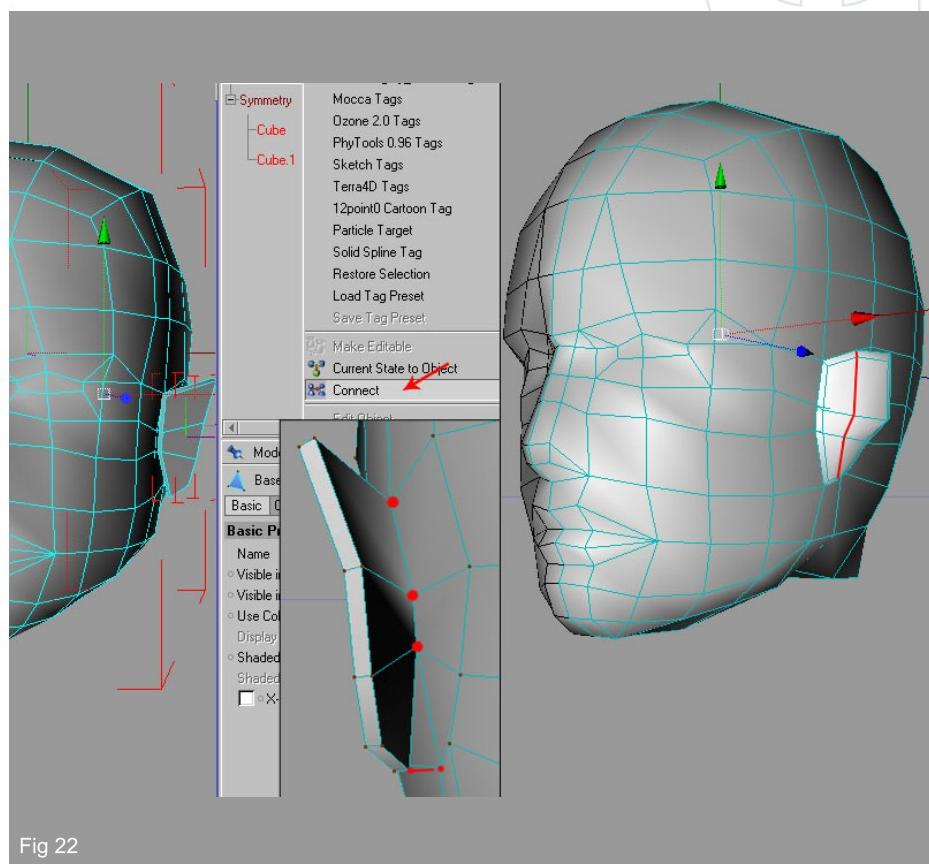
Fig 22
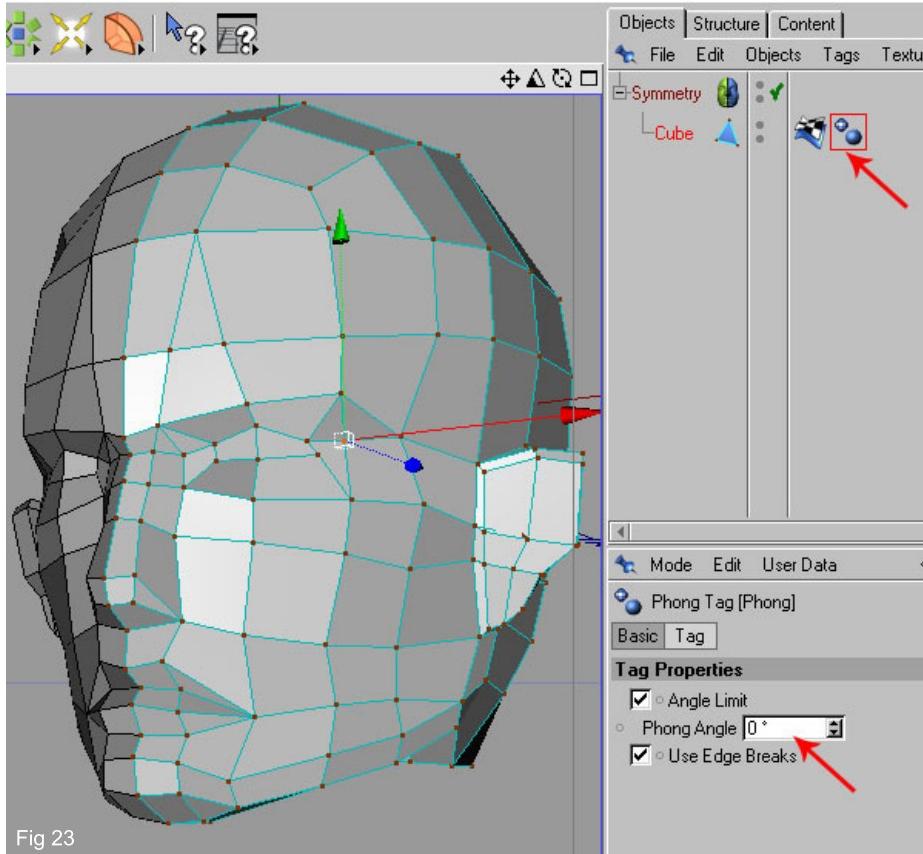
23. Check out the mesh and make any adjustments it needs to obtain a nice shaped head. You also may change the "Phong Angle", select so the Phong Tag and change the Angle Limit in its properties. Fig 23

Fig 23
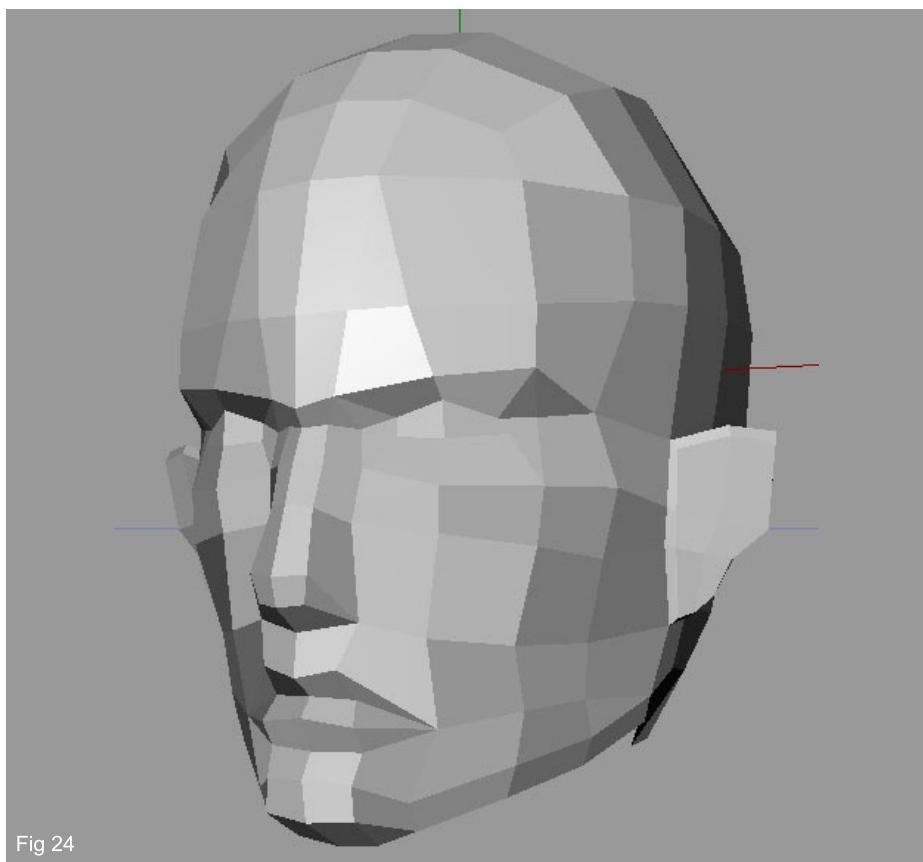
24. In Fig 24 we can see the final version of the head.

Fig 24

Top

Back

Profile

Front
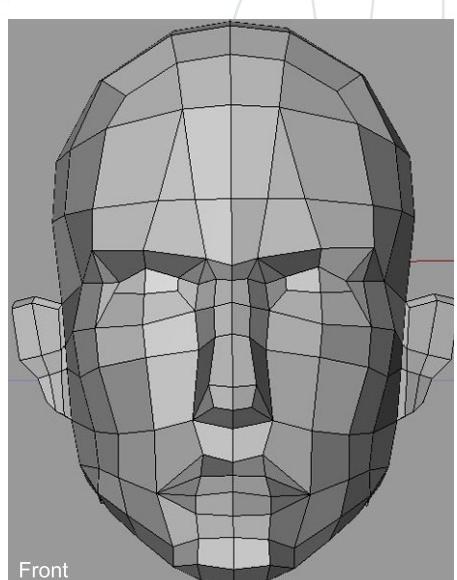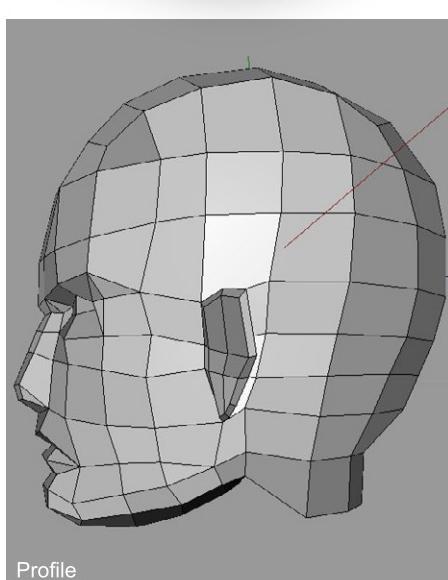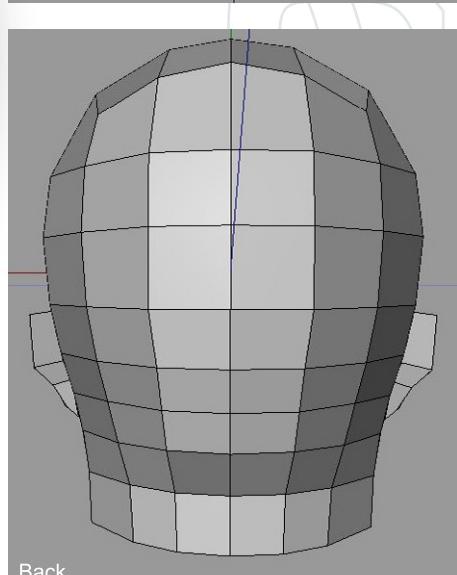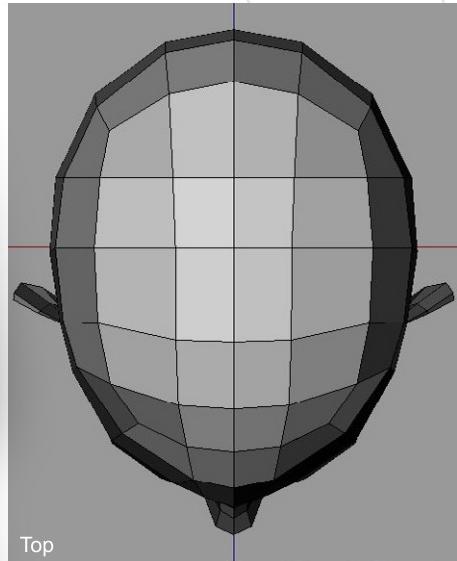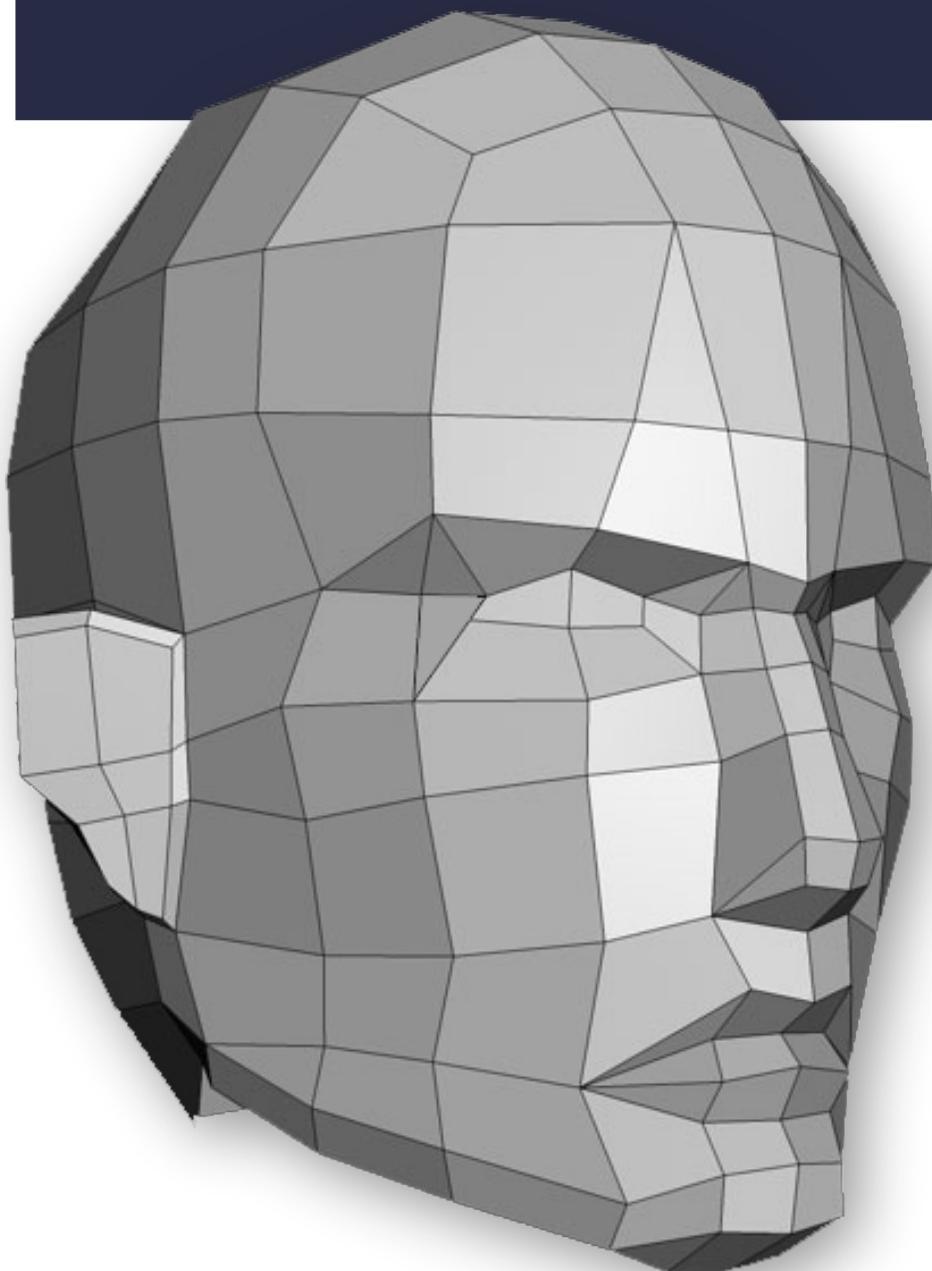
Next month we will continue by building the torso.

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The 'Swordmaster'

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The Swordmaster

lightwave

Is our new precise, step by step tutorial for highly polished, low polygon game character with detailed texturing for real-time rendering. We have had the tutorial created for the 5 major 3d applications, but even if you are not a user of one of them, the principles should be easily followed in nearly all other 3d applications. Over the next 8 months we will outline in detail the process for creating the 'Swordmaster' you see on the left. The schedule for the different parts of the tutorial is as follows:

Enjoy ...

PART 1
MODELLING THE HEAD

INTRODUCTION:

Hi everyone and welcome to the first of eight parts of new tutorial series covering creation of game model called the Swordmaster originally created by Seong-Wha Jeong. During the next 8 months we are going to build the model itself, map and texture it. Creation of game models differ from high poly Sub-Division character modelling, but you'll find a lot of tools and principles working just the same. In this section we'll start with the head of the model using box modelling method.

1. Activate Box tool from Create-Primitives-Box (Shift+x) and press "n" to bring up the numeric requester window. Make it 3.5m wide, 4.7m tall and about 5m deep and enter 4 segments for each axis. This way we get nice segmented box as starting point for head model. Another quick and nifty way to add more 'regular' segments to the model is Subdivide tool from Multiply-Subdivide (Shift+d) and, for this case, Faceted method and you get more geometry to work from.

2. Use Drag and Move tools to reshape the box so it looks more like head. It is a good idea to turn the Symmetry on (Shift+y) in order to keep both sides of the head identical. Using the side view (Right viewport) first and then the front view will give you cleanest and fastest results.
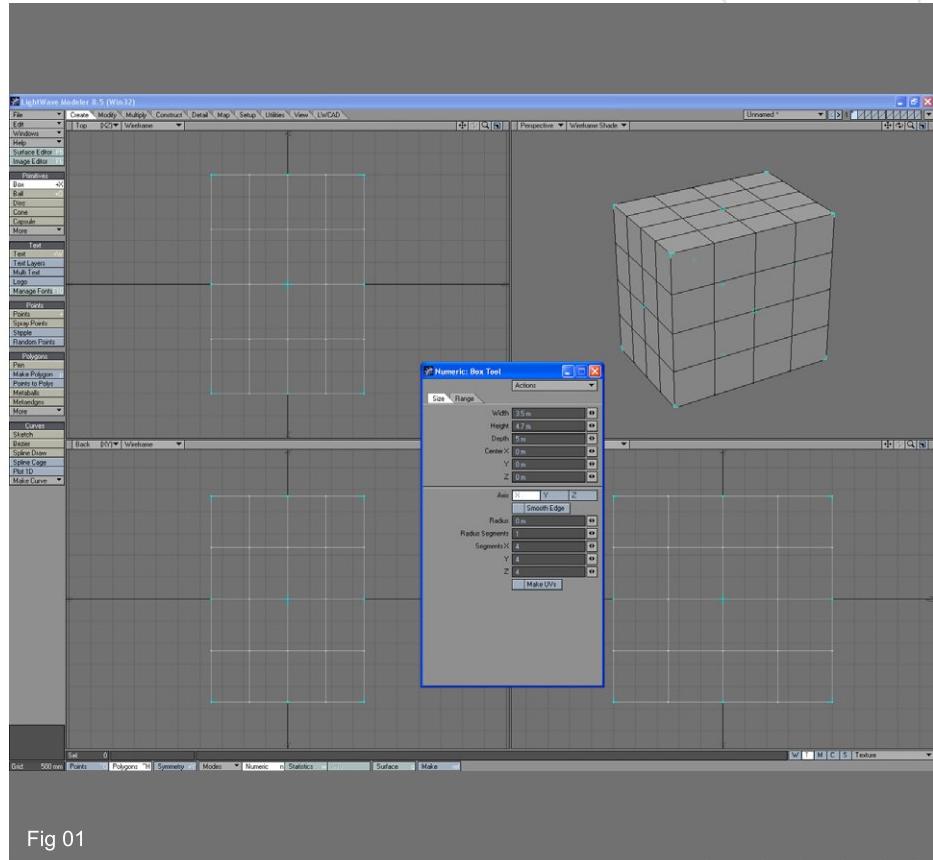

Fig 01
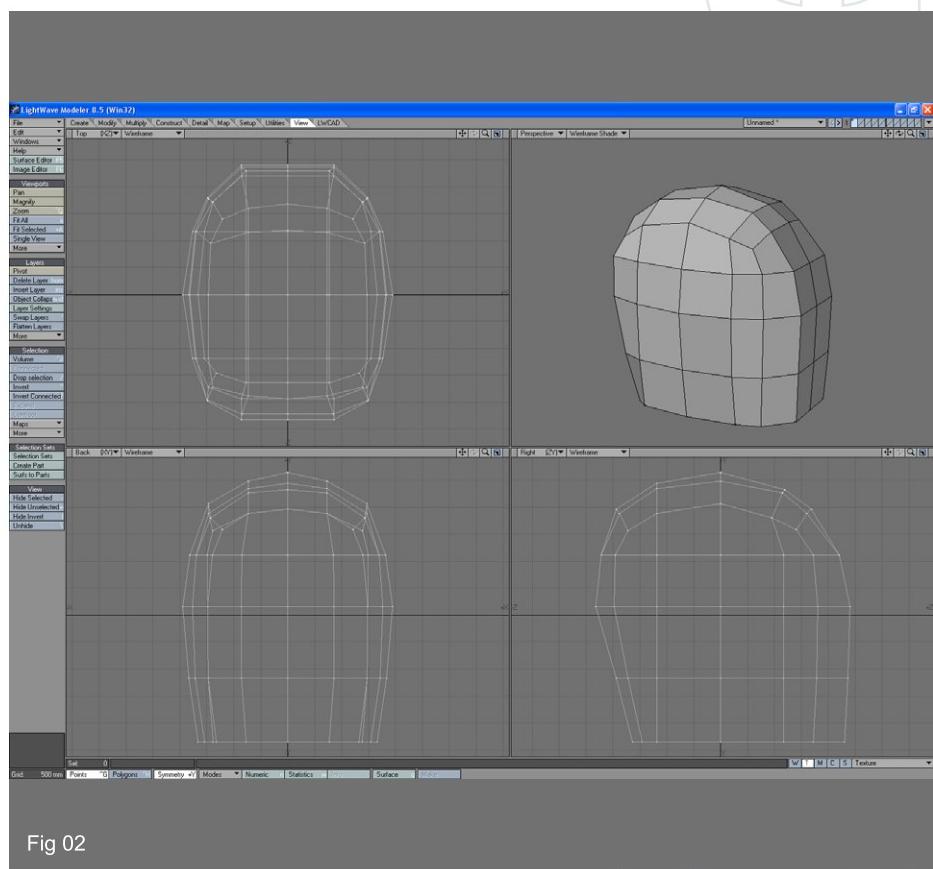
Fig 02
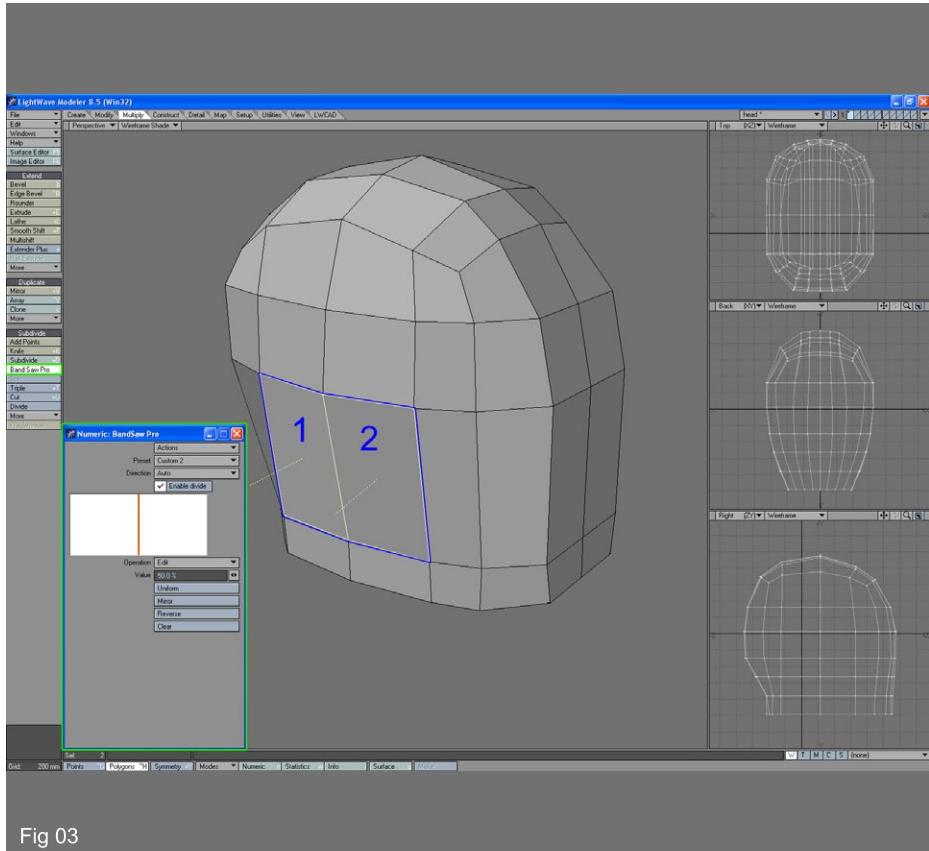
Fig 03
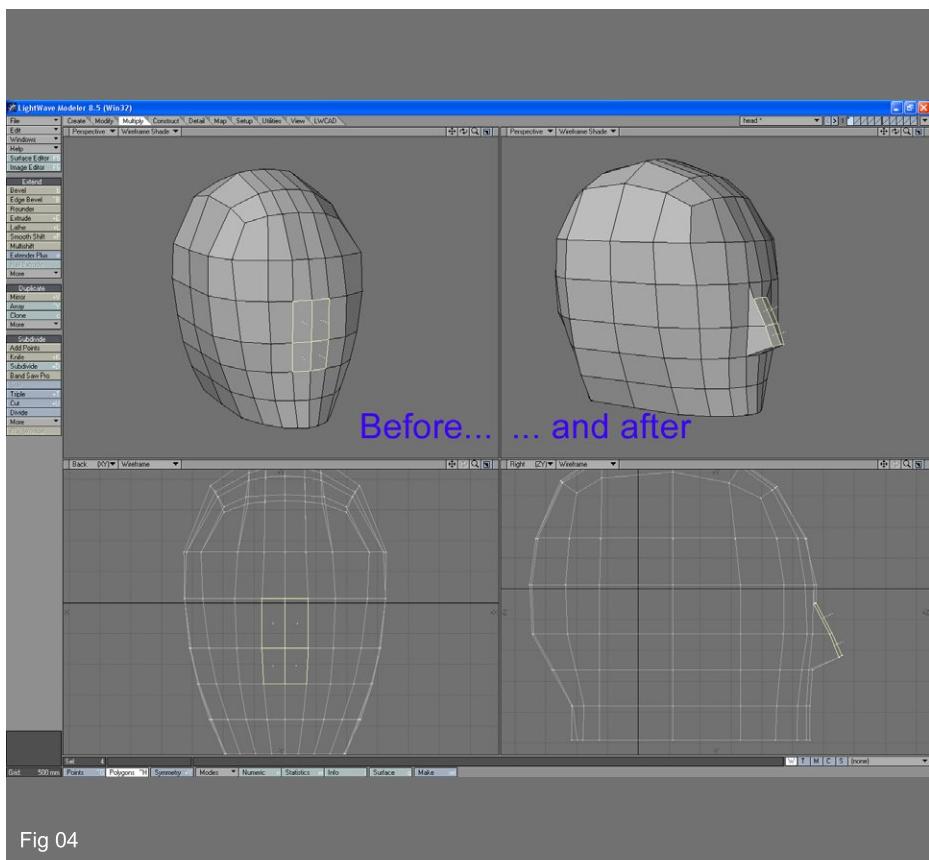
Fig 04

3. In Polygon Selection mode select two adjacent polygons in order shown in image (well, they can be selected in reverse order in this case since we will use Band Saw Pro tool in 50%, but order selection determine in which way Band Saw go around the band of polygons) and activate Multiply-Subdivide-Band Saw Pro tool. Hit "n" to bring up numerical requester end enter the value of 50.0%. Close the numerical panel and switch to Point Selection mode. As you see points added by Band Saw remain selected so you can use the Drag tool to readjust them. On the right side you can see adjusted model from the top, side and front views.

4. Now when we have a rough shape of the head it's time to add some details. Select four polygons in the middle of the front side and hit "e" to extend them once. Activate the Stretch tool and, holding the Ctrl key to lock the tool to only one axis, stretch it down along X and again along Y axis. Once you're done rotate these four polygons in side view and position it so it forms the nose.

5. Rearrange points behind the nose to create cheek and eyebrow area. As we did in previous step, select two polygons next to the nose, extend them ("e") and scale down and arrange into eyes. Do some necessary modifications to the bridge of the nose so it looks more natural.
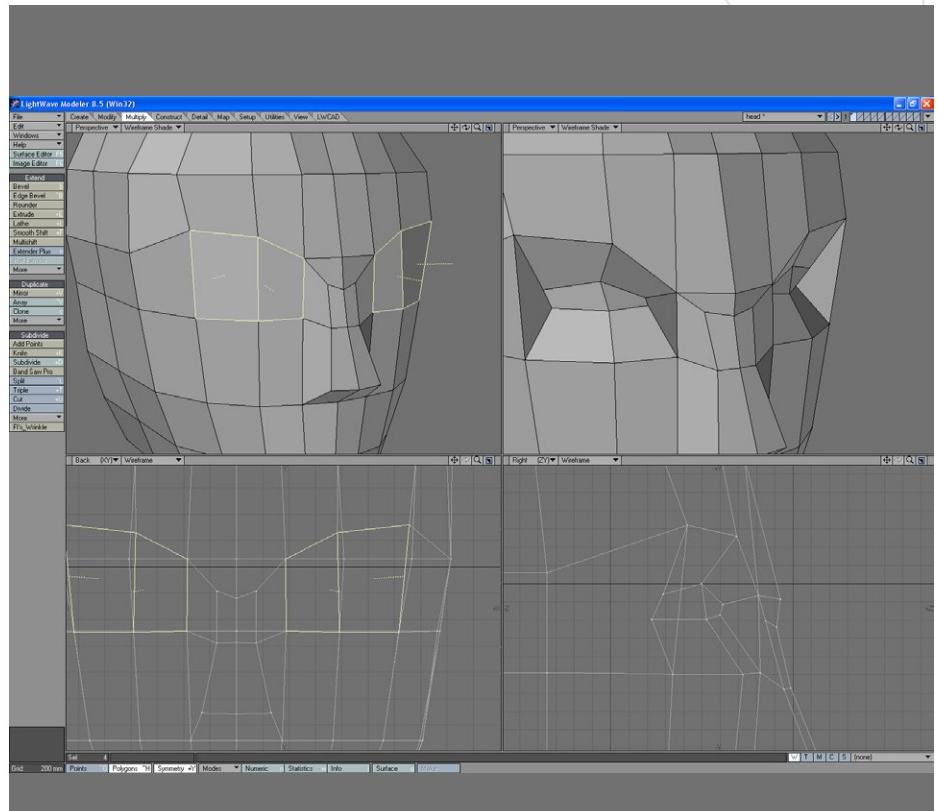

Fig 05

6. Now we need to define mouth shape. Select polygons under the nose from the most left to the most right one. Activate the Cut tool (under Multiply-Subdivide) and make 3 cuts on these polygons (turn off terminate cuts checkbox as we don't need cut to be all made from tris and quads). Weld points on the sides of the cut into lower left point of cut polygons on the left and do the same on the right side. Rearrange points until you get nice mouth shape.
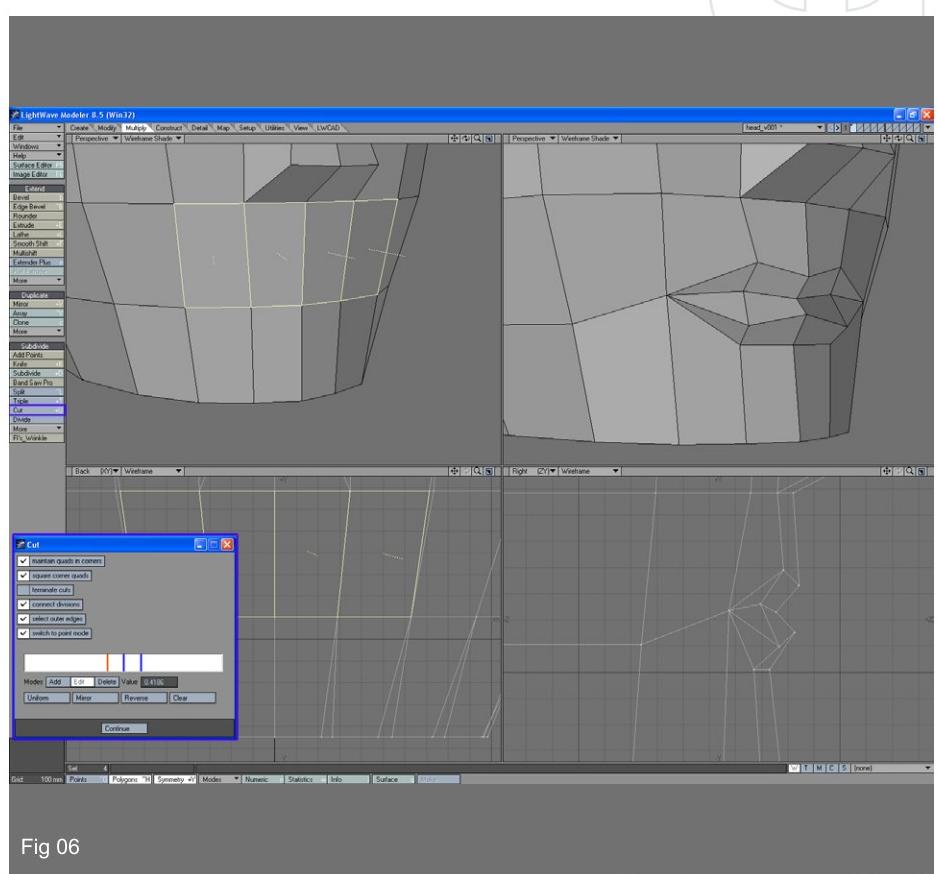
Fig 06

Fig 07

7. Adjust the bottom points to reshape the chin area into more natural form.
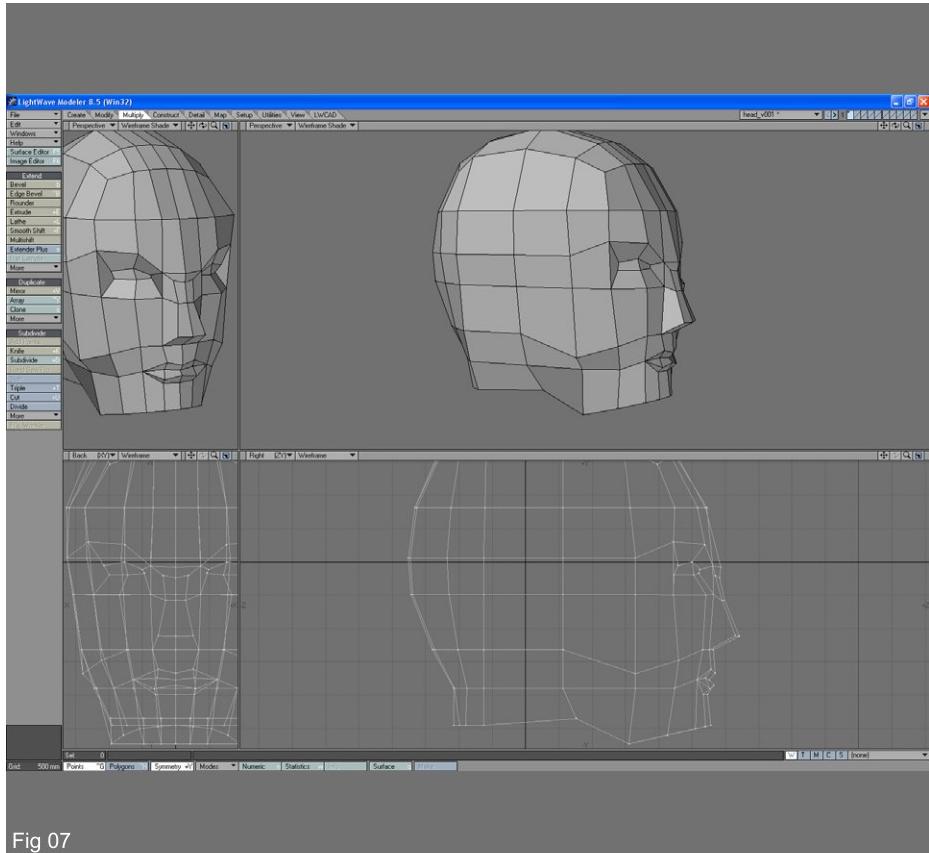
Fig 08

8. Select shown polygons and Band Saw them in half to add more geometry in order to make more the face more defined.
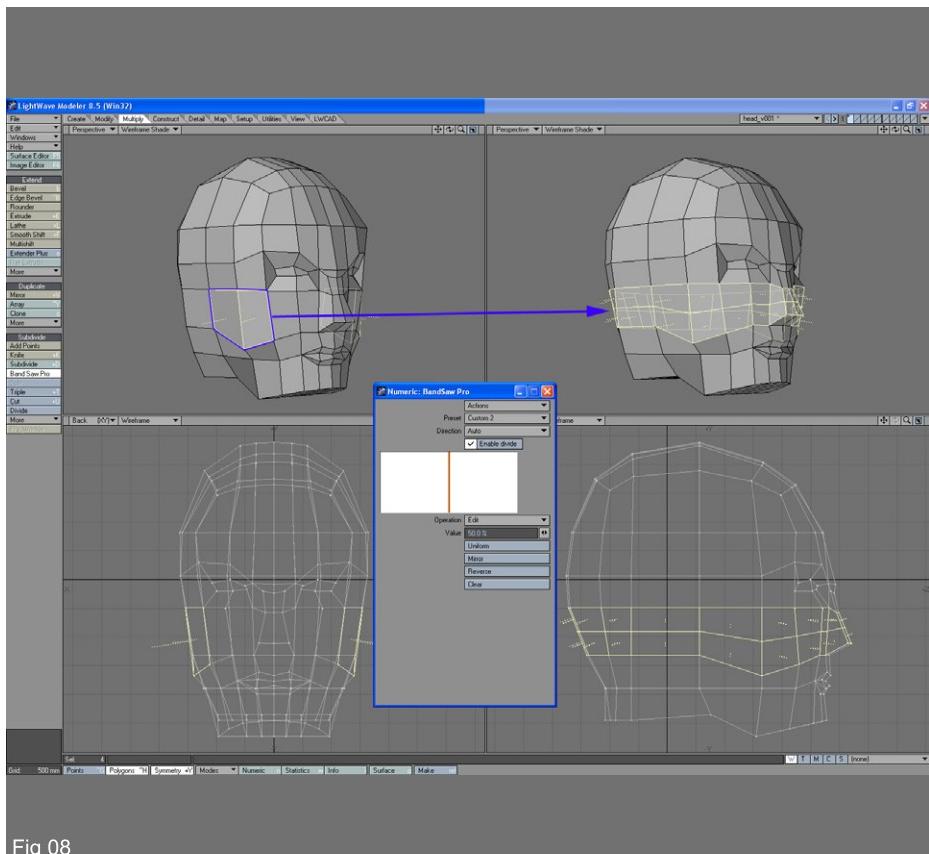
9. In order to make both sides absolutely symmetrical, select and delete one half of it. Select points in the middle of the model and bring up Set Value panel ("v"). Set X for axis and 0mm for the value and hit ok. Activate Mirror tool (Ctrl+v), bring up numeric requester, set X for axis and 0 for all values and click ok (also make sure Merge points box is active). This way we ensure all middle points are on zero value along X axis and both sides of the head are symmetrical.
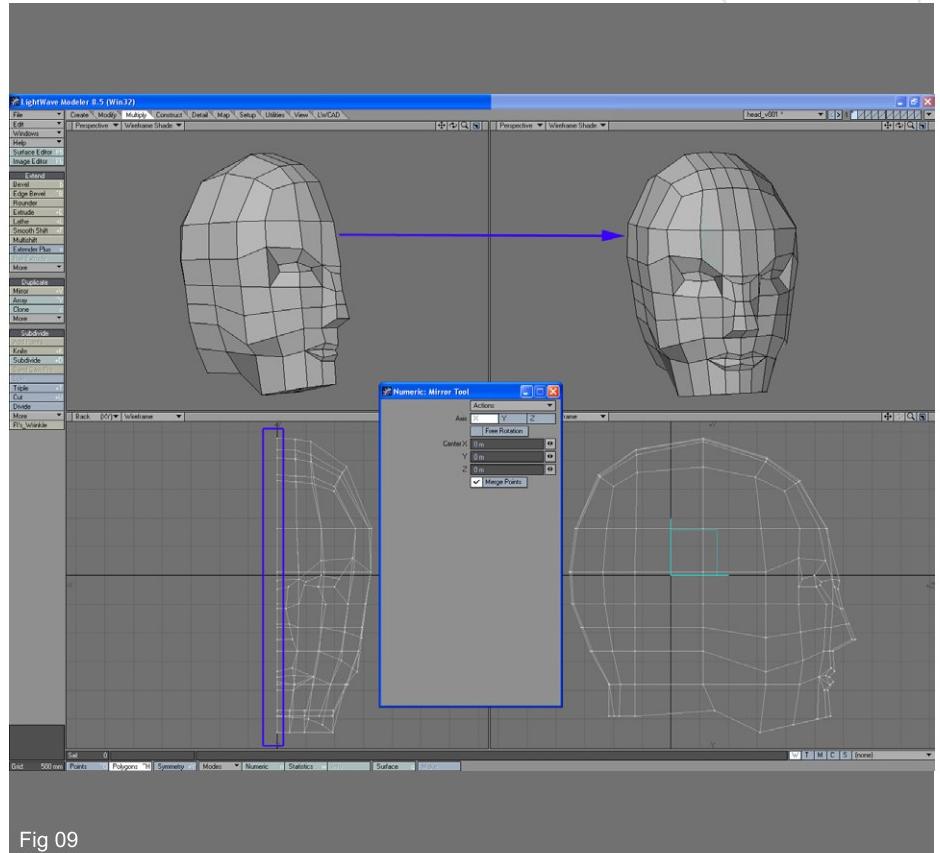
Fig 09

10. To fix areas around the eyes select most left two polygons in image and use Cut tool to cut them in half (green line in fig. 10). Weld points on both left and right side of cut polygons (red lines in fig. 11). Do the same thing on two polygons near the nose. Finally, drag points to adjust the shape of the areas around the eyes.
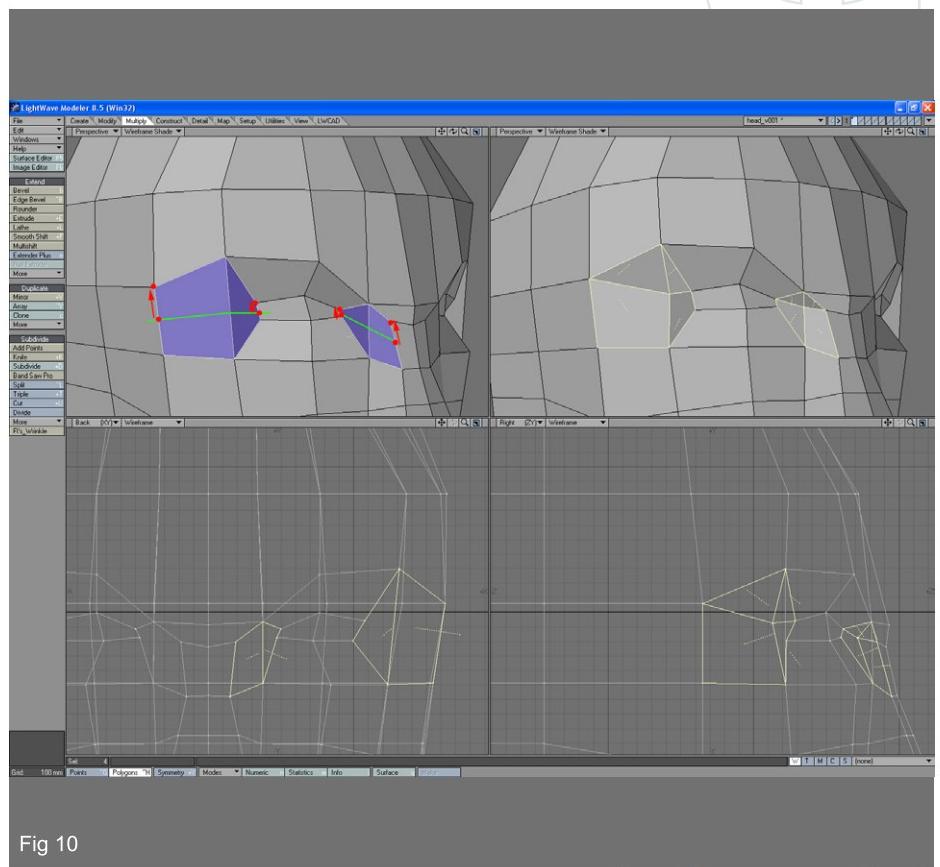

Fig 10
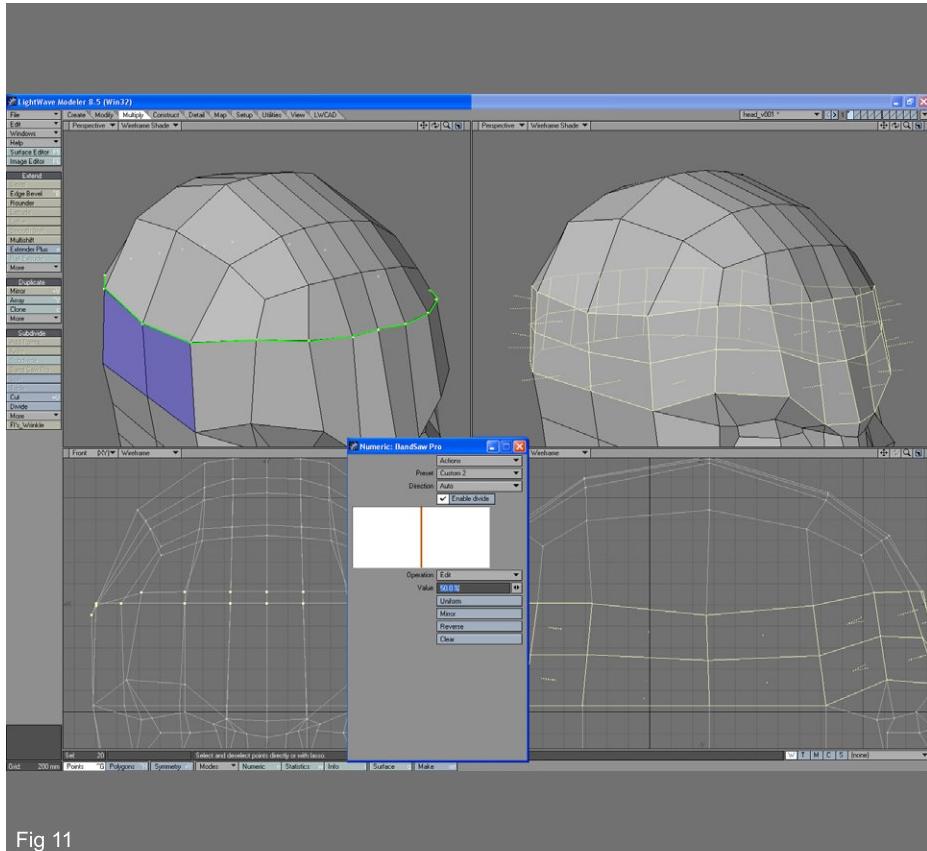
Fig 11

11. To add more details on the forehead select points marked in green line in Fig. 11 and move them up. Select two polygons marked with blue colour and use Band Saw Pro tool to divide them on 50%.

Fig 12
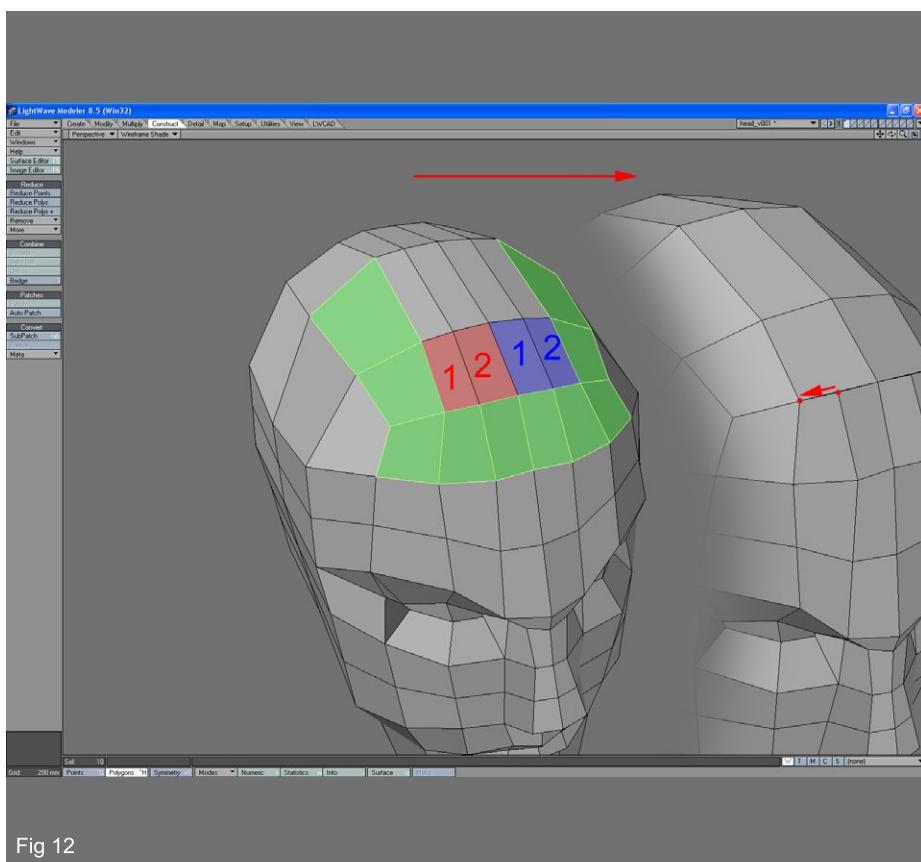
12. As model is developed more and more details and geometry is added. However, there might be parts where they are some not necessary polygons. For example on the top of the head we have two rows of polygons but only one is actually needed. To get rid of unnecessary polygons on top, select polygons marked in green on image and hit minus key ("-") to hide them. This way we cut the loop of polygons without actually deleting anything. What is not seen, it won't be considered by tools like Band Saw or Band Glue. Select polygons marked red in image and activate Band Glue tool (Construct-Reduce-More-Band Glue). Do the same thing for blue ones. Finally, unhide hidden polygons by pressing "\" key and Weld Average points marked red. Do the same on the other side.

13 To add more details to the nose select two polygons in the bottom of the nose and Bevel ("b") them about 50mm for both Shift and Inset. Delete polygons marked blue in image and weld points like arrows are showing to patch the gap remaining after we delete polygons. Be sure to turn off Symmetry mode before welding, otherwise you'll get mess because Modeler welds everything on both left and right side.
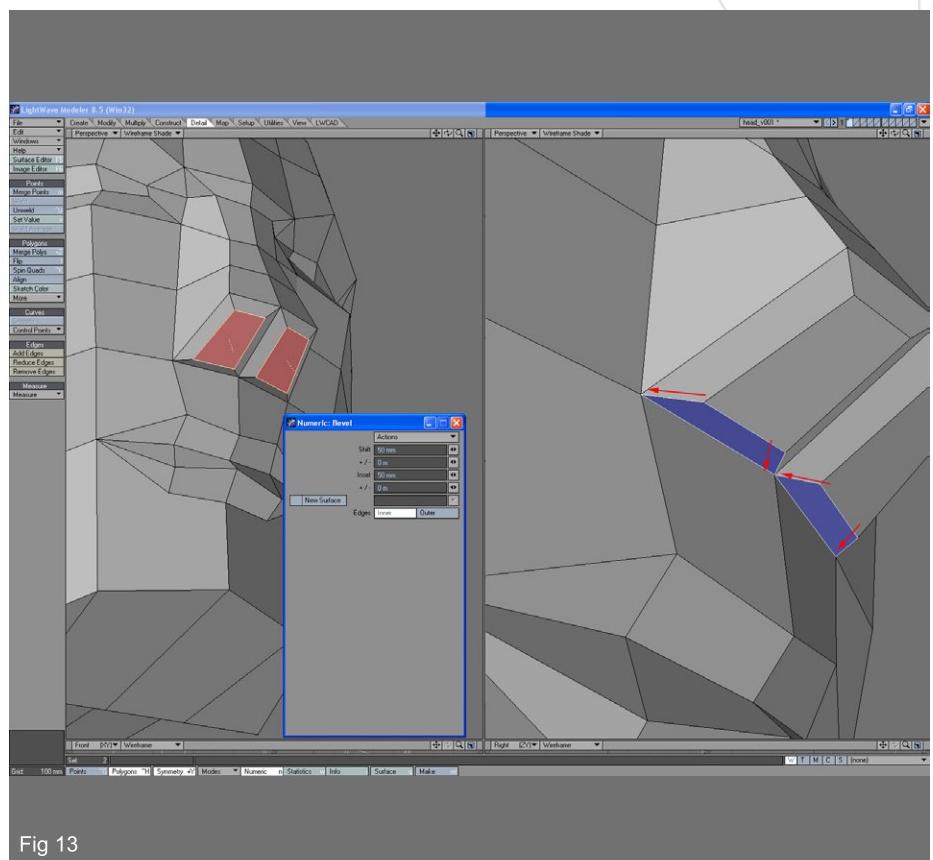

Fig 13

14 Add another cut under the lips in order to get more details. Select polygons marked in green starting from the most left one to the most right one. Use Cut tool to divide them in half. Finally Weld points marked in red to avoid 5-point polygons.
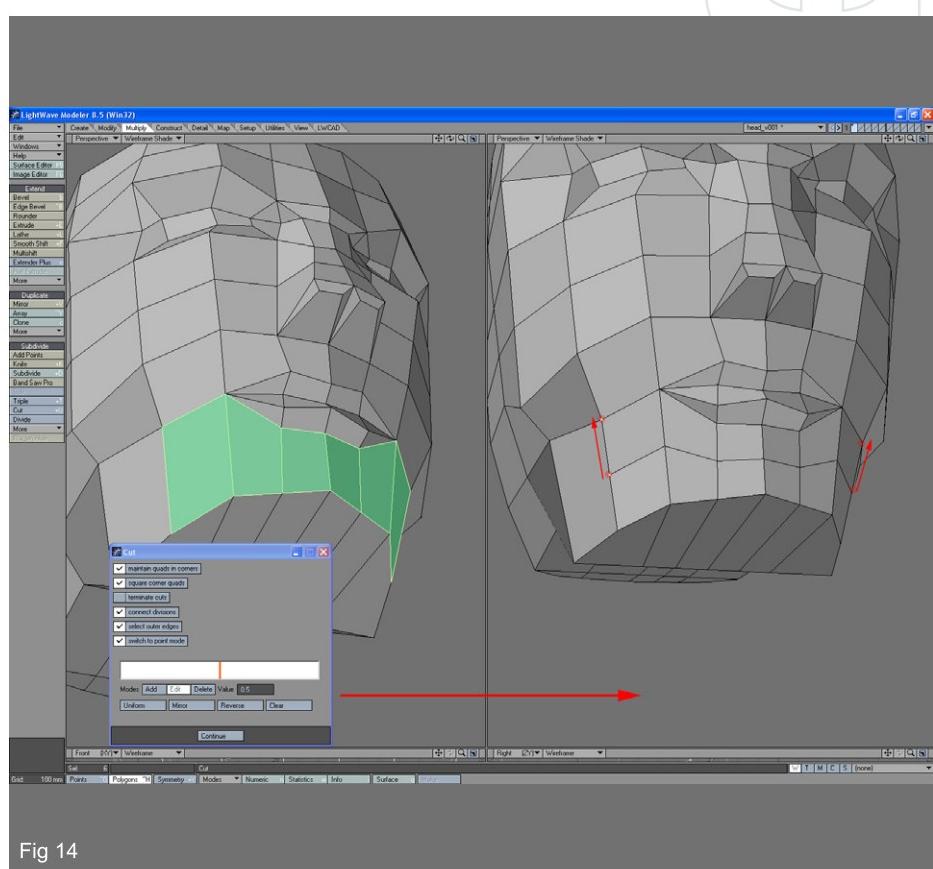
Fig 14
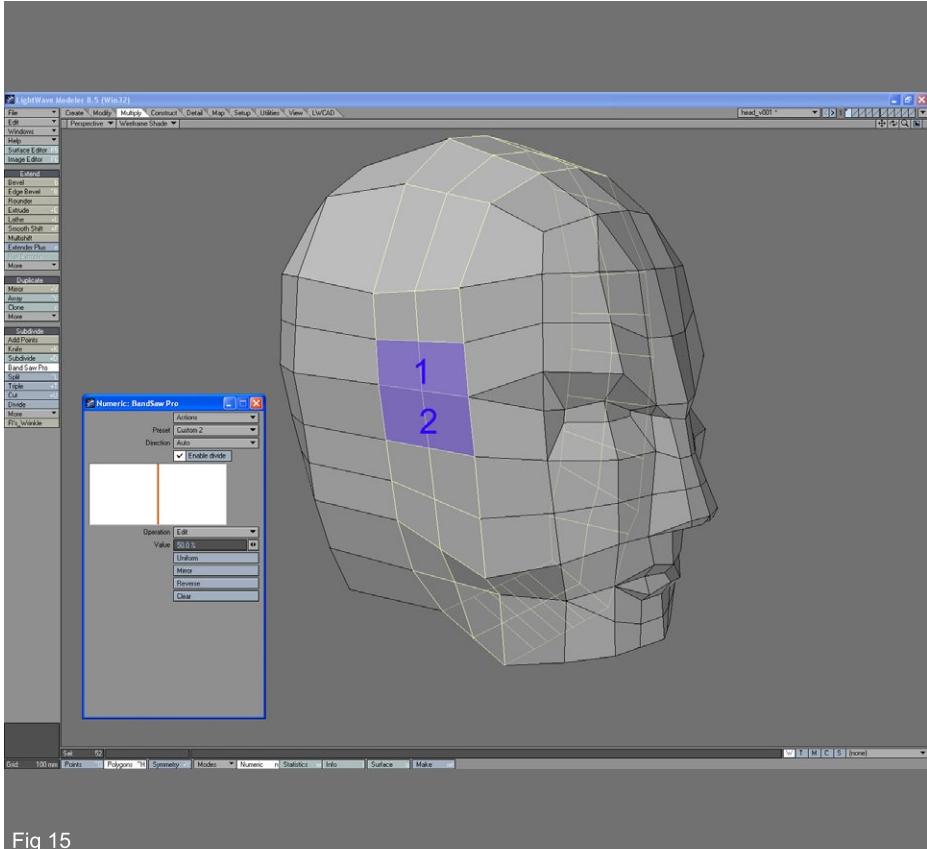
Fig 15

15 Select two polygons marked blue in image and use Band Saw Pro tool to cut them in half.
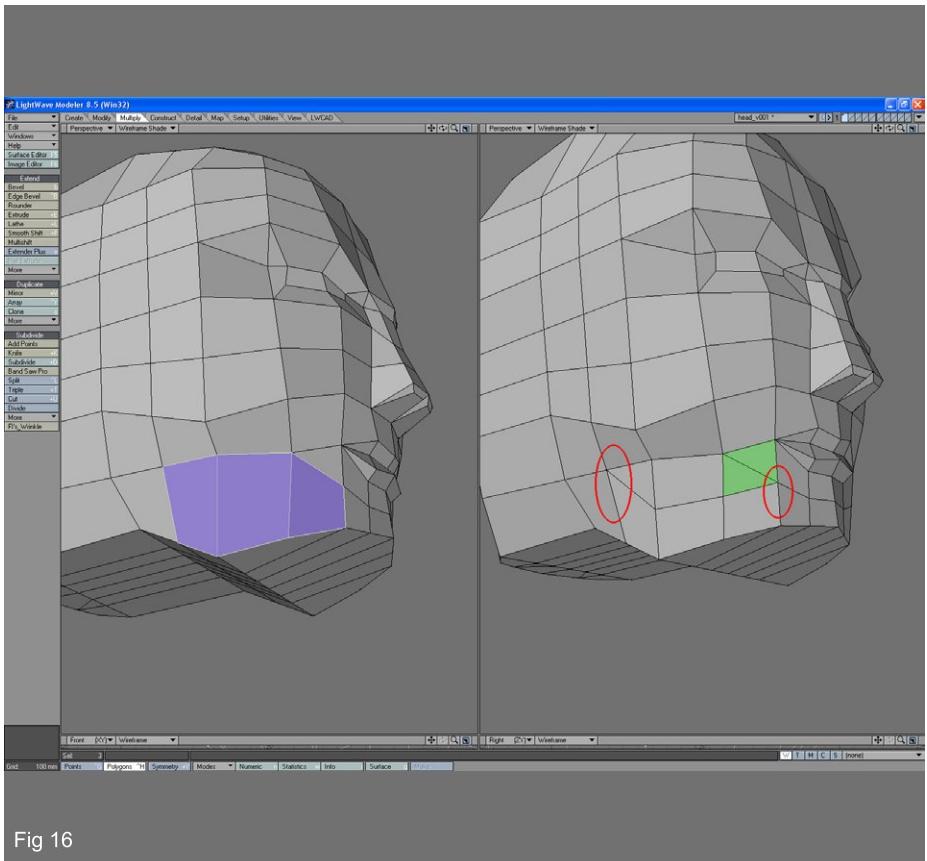
Fig 16

16 To make chin more defined add another Cut to the polygon marked blue in image. After Cut weld point pairs marked red in image and finally Merge (Shift+z) polygons to get rid of those ugly triangles next to the mouth. Repeat this step on other side of the model.

17 To fix lower flat part of the chin select polygons marked in green and use the Cut tool to divide them. Weld end points to fix the cut. Select front polygons from lower chin (closer to the mouth, marked blue) and apply another Cut to them. Delete corner triangles (purple in image) and weld 3 points in every corner into one. Do the triangle delete and welding on the other side of the model. Finally weld 3 points into central one on the part closest to neck to reduce future geometry.
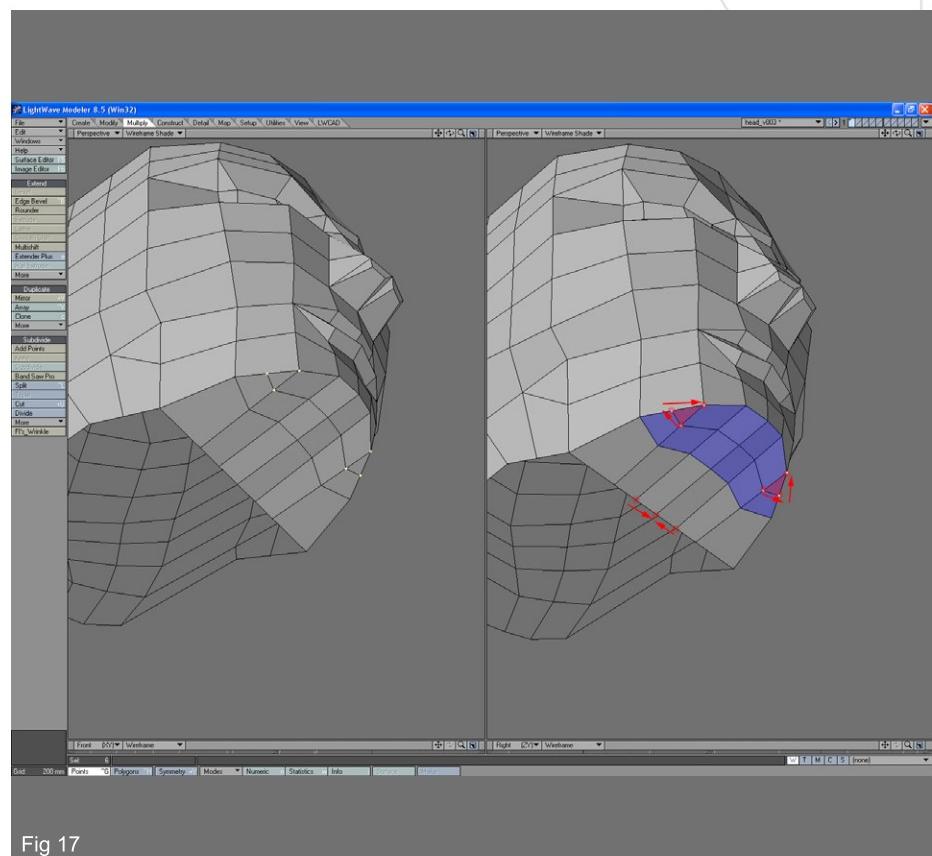
Fig 17

18 Weld points marked red in image on both left and right sides of the model. Rearrange points so the form rough shape of the ear like it is marked green in image.
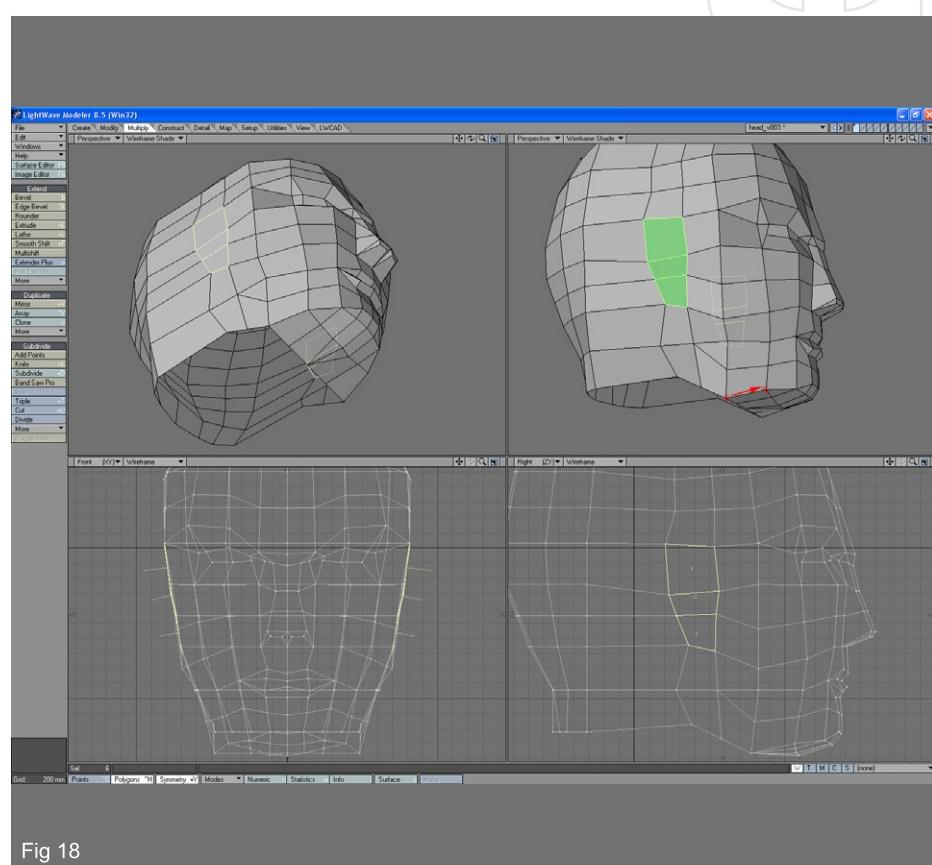
Fig 18

Fig 19

19 Copy these three polygons into new layer, move them a bit away from the model and paste them back into layer where the head is.

Fig 20
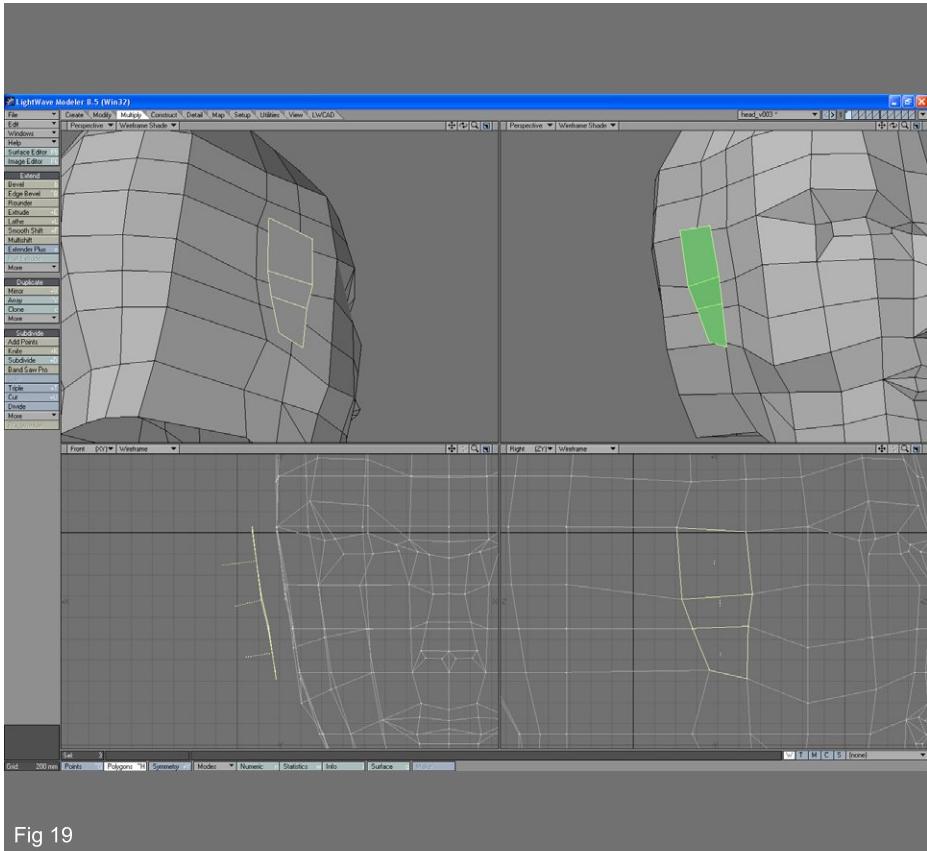
20 With ear polygons still selected, activate Extrude tool (Ctrl+e) and extrude toward the head. When using Extrude tool always go in the direction opposite from the flat polygon normals in order to have extruded polygons facing outward.
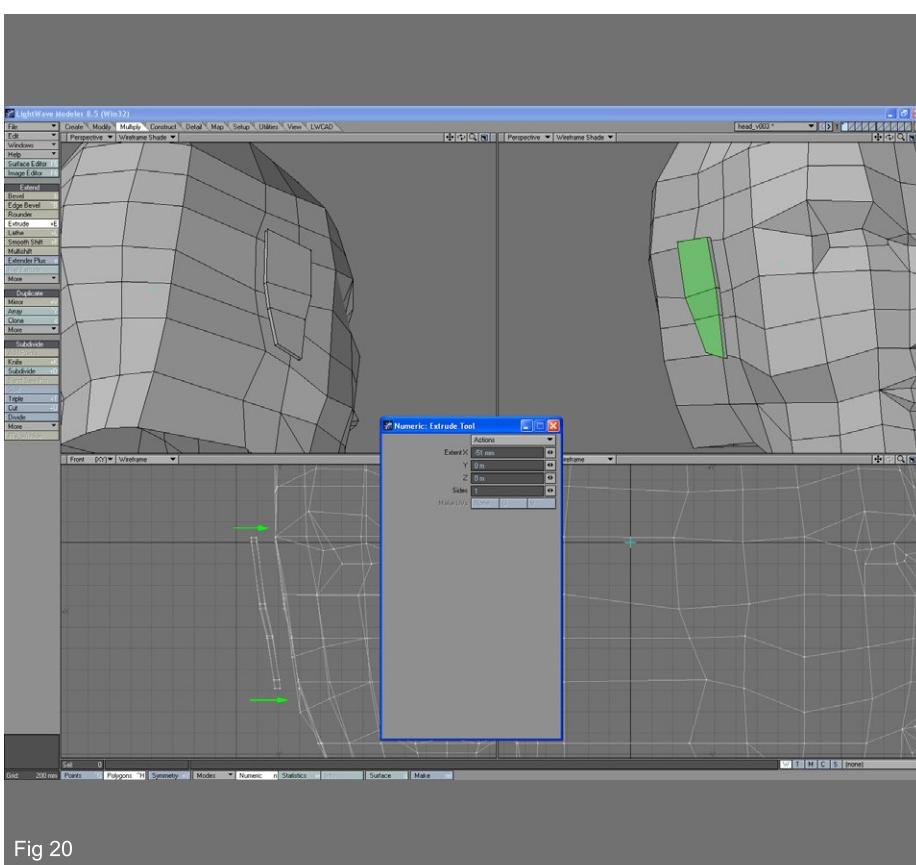
21 Select polygons marked with green and apply Band Saw Pro to divide the band in half. Rearrange points of the ear to make it more anatomically correct. Finally rotate the ear and bring it close the head.
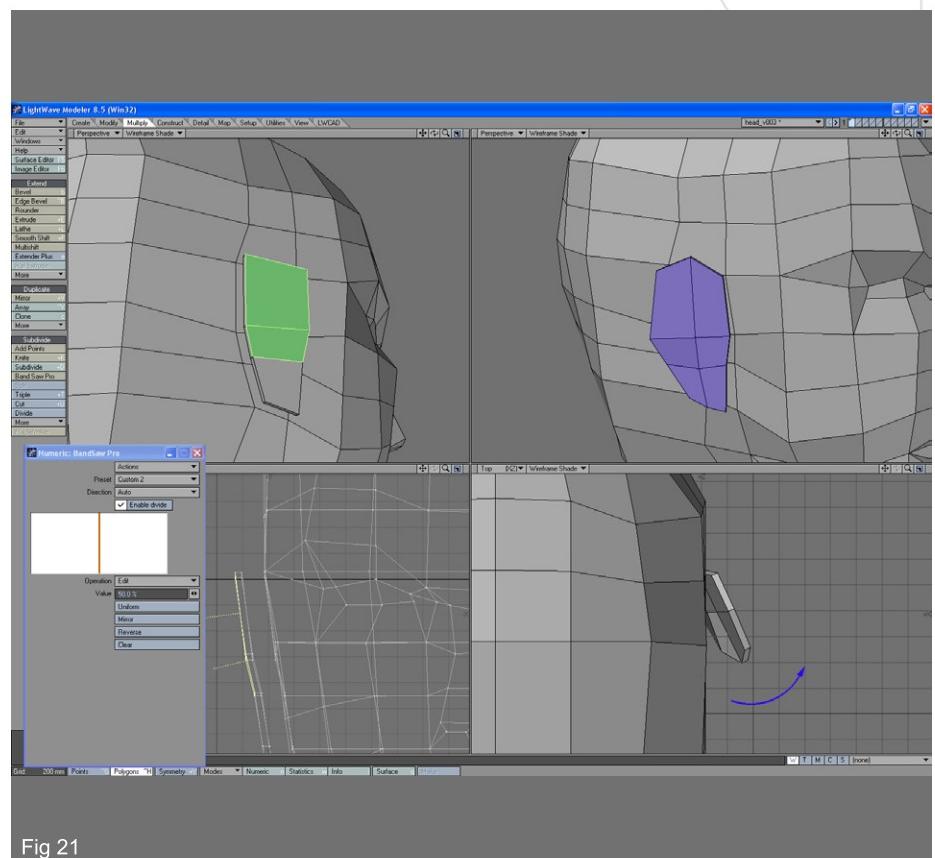
Fig 21

22 Weld shown points belonging to ear to their pairs on head. Now ear is connected to the head. To the same on the other side, or repeat step 9 to make both sides of the head symmetrical.
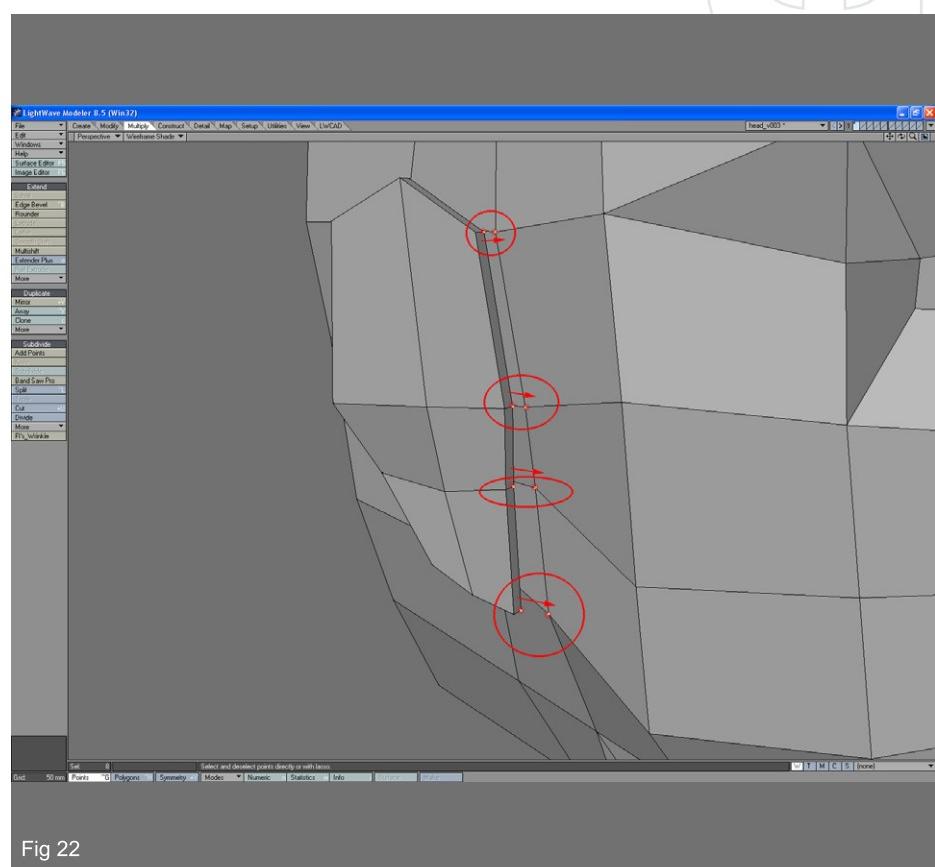

Fig 22
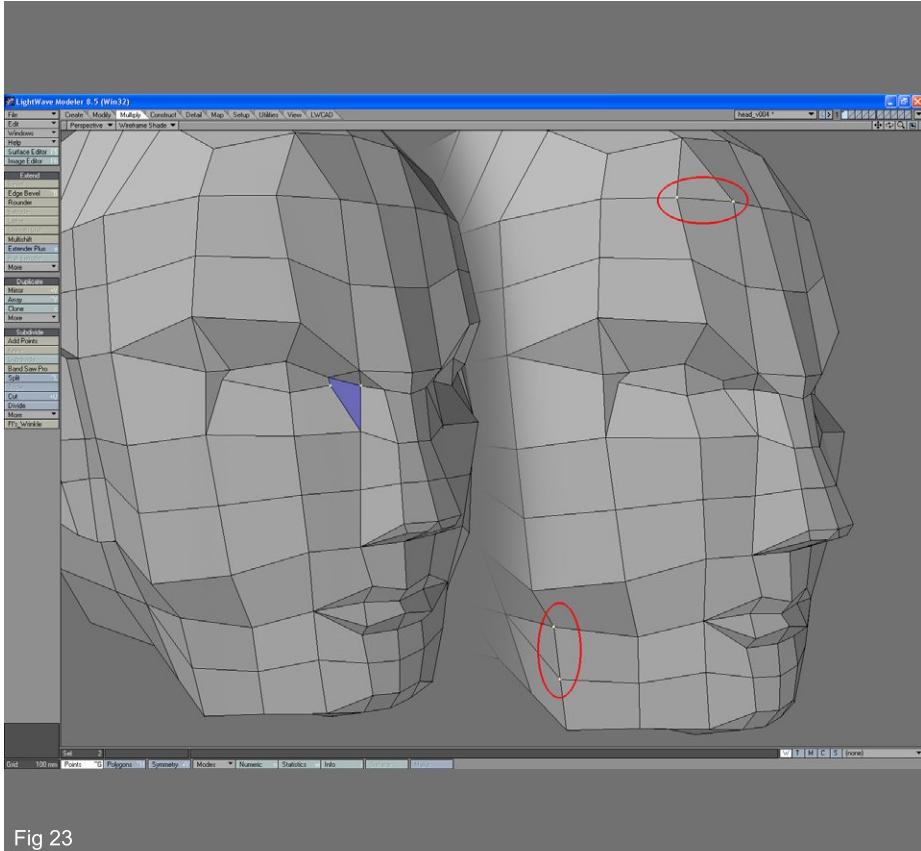
Fig 23

23 Select polygon marked blue in image. Switch to Point Selection mode and select two points shown. Activate Multiply-Subdivide-Split to cut the polygon to this points. Select two triangles above that remains after and merge them into one quad. Weld point pairs marked red in image. Finally, press "w" to bring up polygon statistics window, check out for 2 Vertices polygons (remained from welding) and delete them.
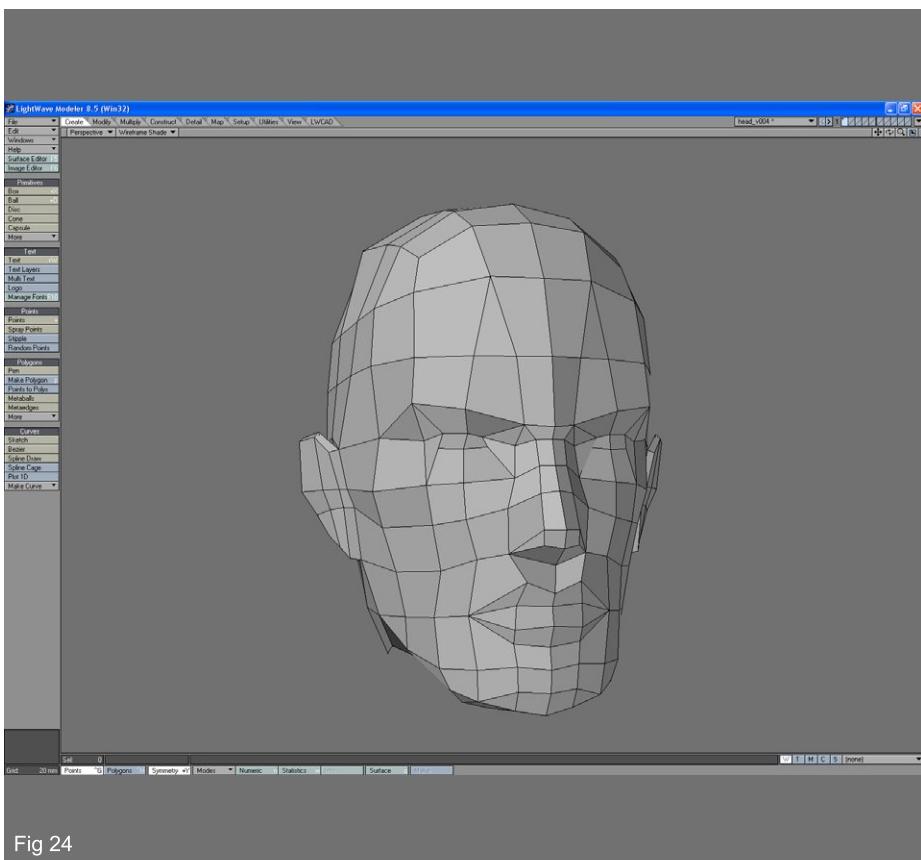

Fig 24

24 Using Symmetry mode and drag tool go around the model and adjust where is needed to fix irregularities in the model. When working with low poly models it is necessary to carefully check transitions between polygons.

Top

Back
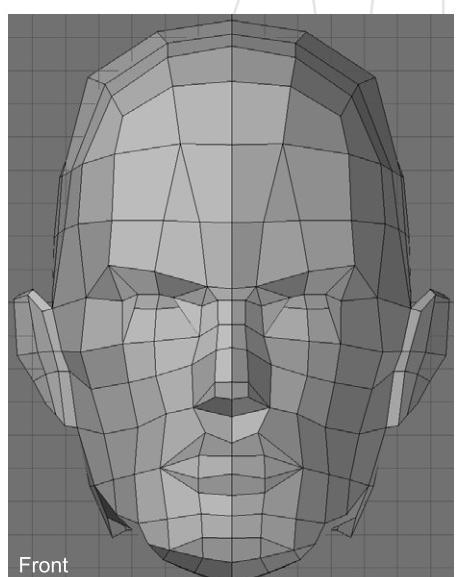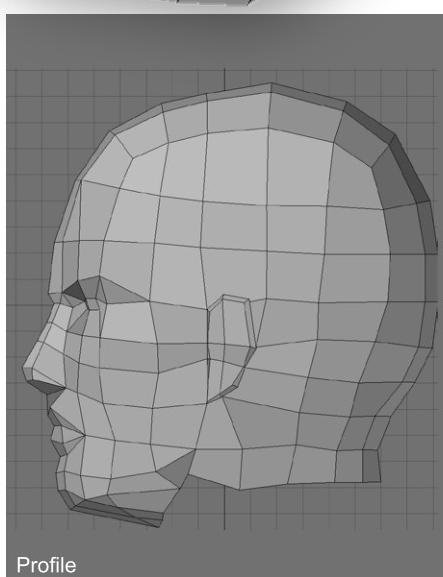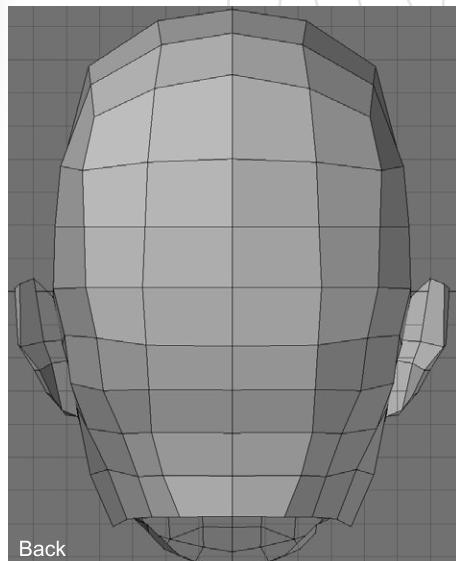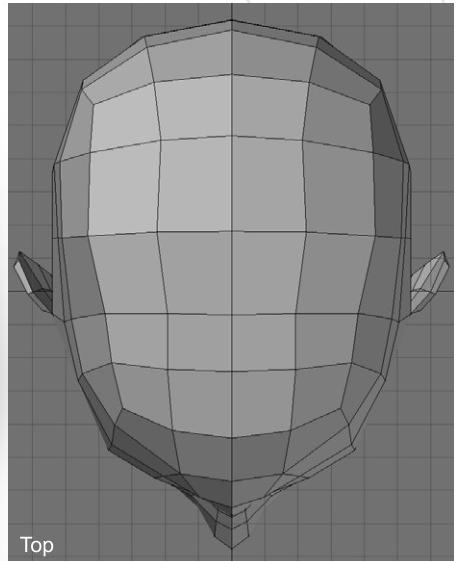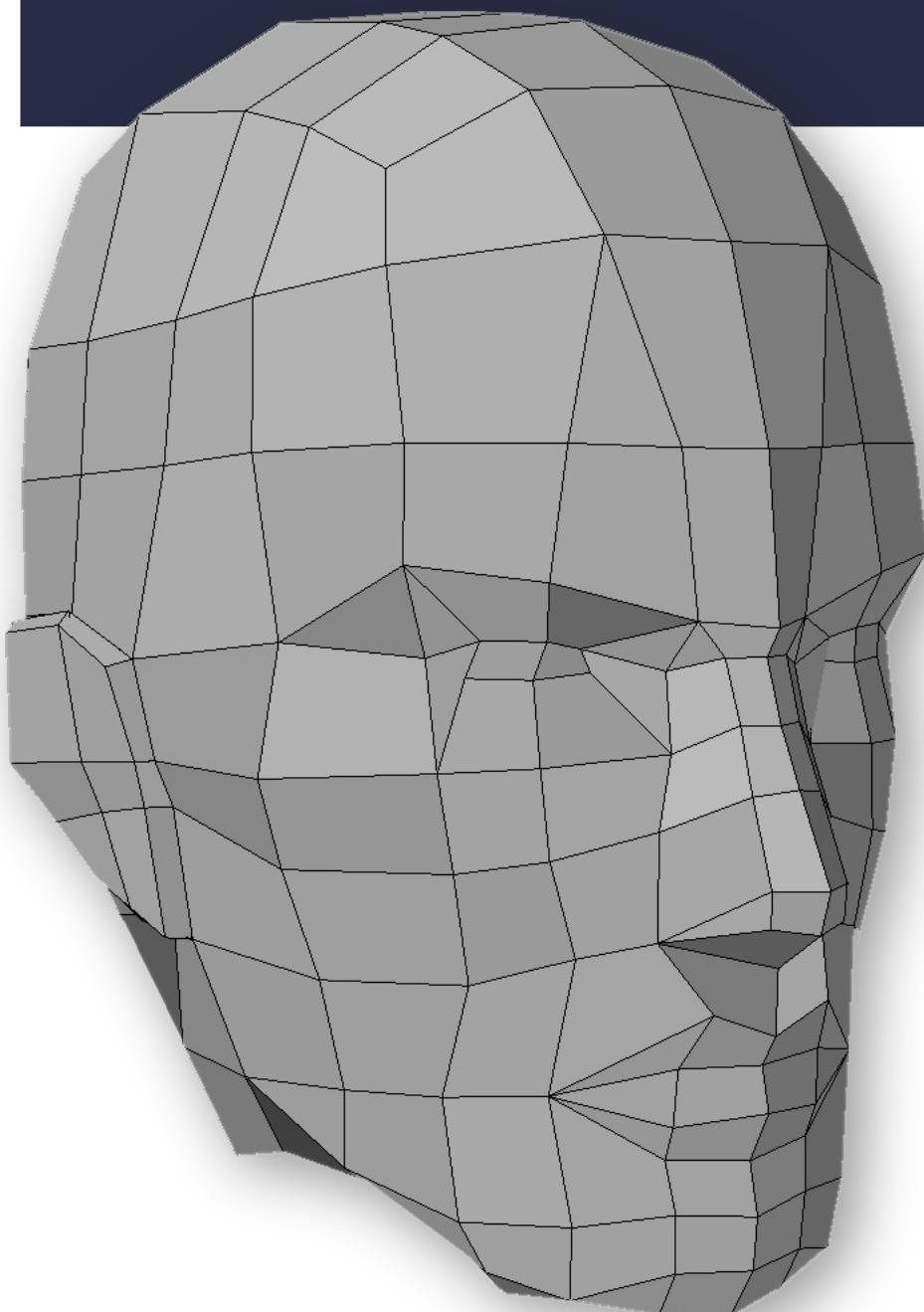
Here are perspective and viewport views for references. In the next issue we are going to create upper body of The Swordsman model.

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character was originally created by

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Profile

Front

The Swordmaster

Maya

Is our new precise, step by step tutorial for highly polished, low polygon game character with detailed texturing for real-time rendering. We have had the tutorial created for the 5 major 3d applications, but even if you are not a user of one of them, the principles should be easily followed in nearly all other 3d applications. Over the next 8 months we will outline in detail the process for creating the 'Swordmaster' you see on the left. The schedule for the different parts of the tutorial is as follows:

Enjoy ...

PART 1
MODELING THE HEAD

1. The first step we create a basic cube for us to start modeling from. Create a polygon cube (Create < Polygon Primitives < Cube). Scale your cube up slightly ("R" being the scale tool hotkey). On the right side of the screen in the channel box, under the "INPUTS" tab, click on the name "polyCube1", and it will open up a few addition attributes we need to adjust. Set width/height/depth subdivisions all to 4. (Fig 01)
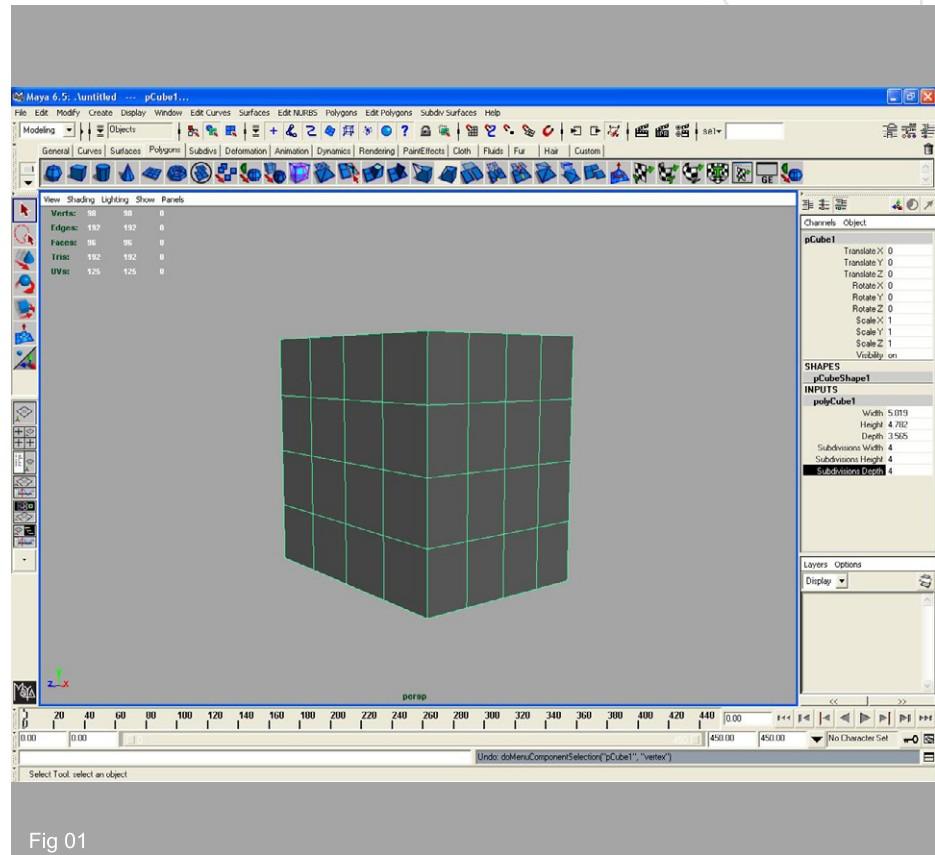
Fig 01

2. Now we need to enter component mode to manipulate the verts. With the cube selected, right mouse button click and hold on top of the cube and you'll notice a marquee menu pops up. From the menu select "Vertex", and you'll notice that all the individual verts on your cube are now move able. Start to move and arrange them into the basic head shape. It's best to work from the side viewport on this, since we're just looking to create a very basic profile. Don't worry about individual features like nose or mouth, just get a nice head shape going. (Fig 02)
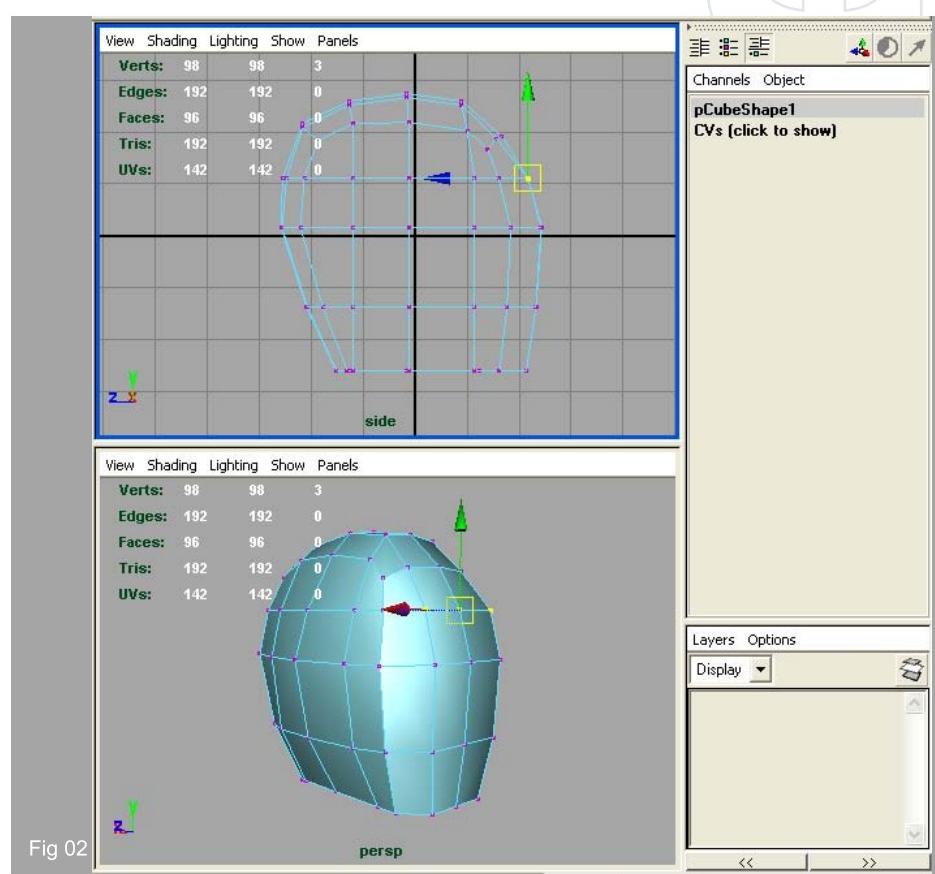
Fig 02
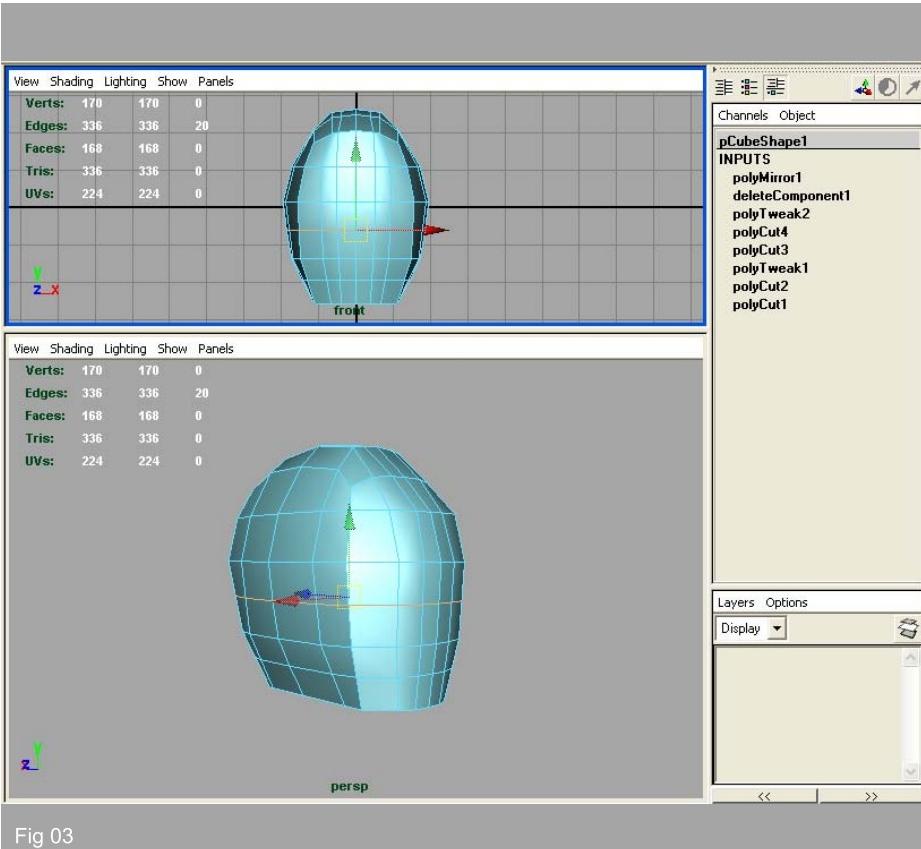
Fig 03

3. Now that we have a nice head shape, we can begin to refine it. Lets start by cutting in another row of edge to work with. Using the split polygon tool (Edit Polygon < Split Polygon Tool), simply click along the edges you want to split, and it will draw a new edge along each point you click on. So, split the highlighted edge in the image into your model. When you're doing splitting in the edge, hit "Enter" to actually completely the tool and create the edge. Once the new edge is made, start shaping it into your model. (Fig 03)
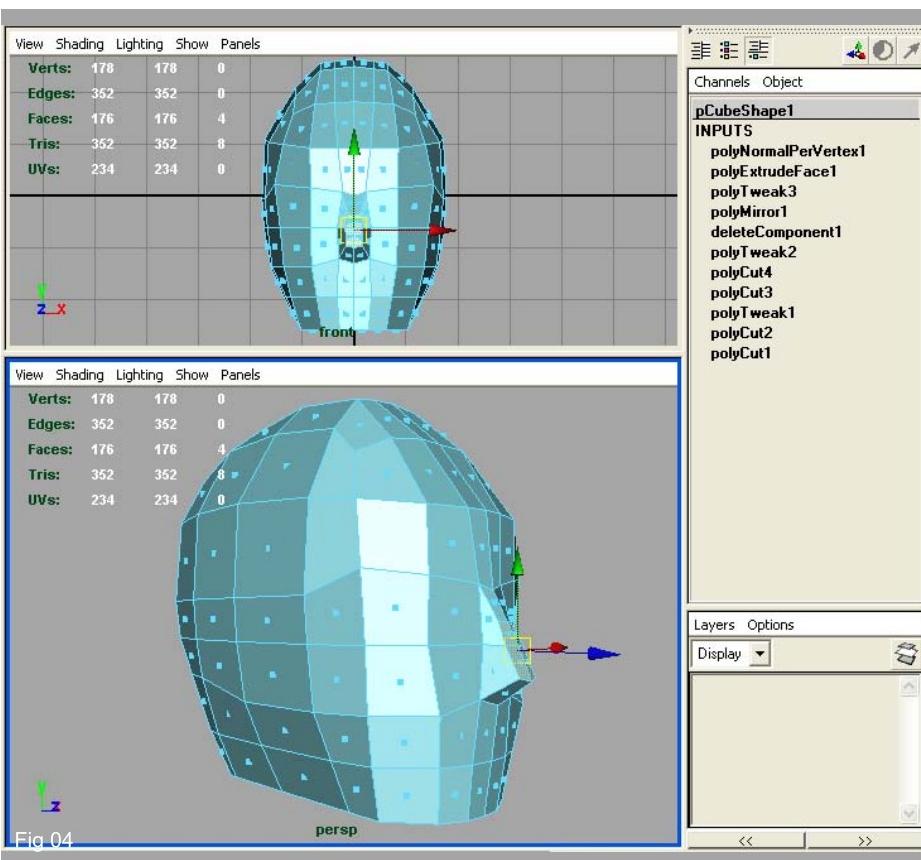

Fig 04

4. Nose time. Select the front four faces and extrude them (Edit Polygon < Extrude Face) outwards slightly. These new faces you've extruded out, start to shape them into the nose area. Keep shaping the head with each step as you go. (Fig 04)

5. The eyes sockets. The same way we did the nose, select the two faces on the mesh where your eyes are going to go and extrude them in (Edit Polygon < Extrude Face). Shape these new interior faces into the eyes. Be sure to sink them slightly into the head, the eyes don't sit flat on the face. (Fig 05)

Fig 05
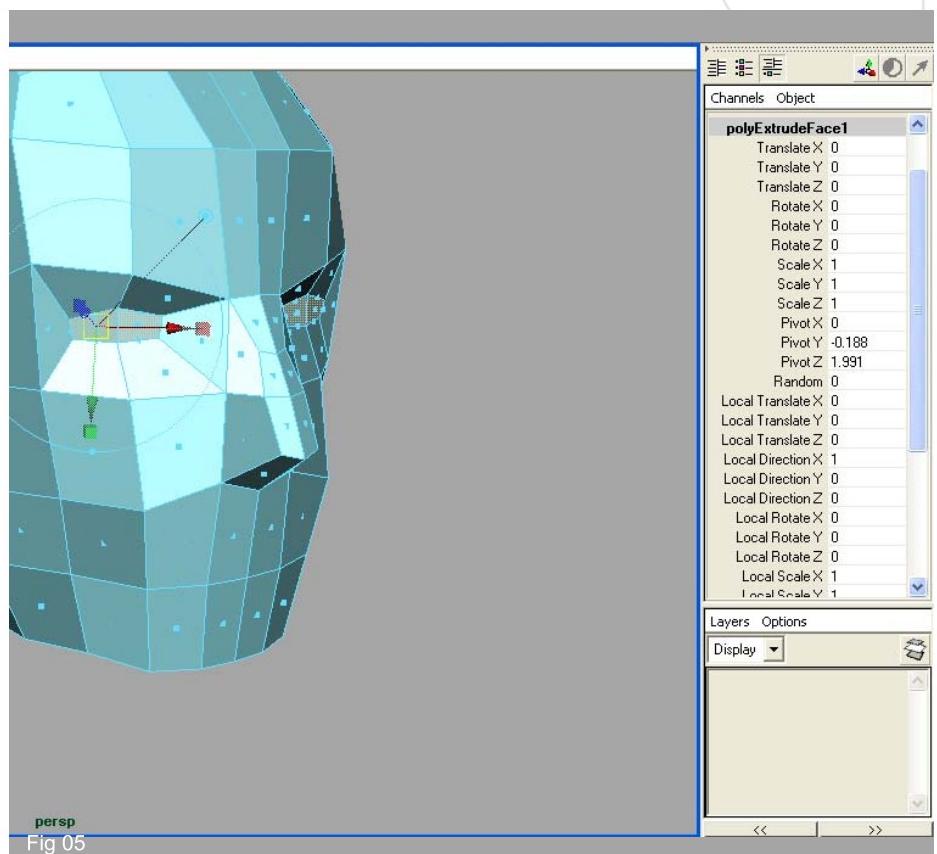
6. Lets get a basic mouth shape going here. Cut in the highlighted edges below the nose with the split polygon tool (Edit Polygon < Split Polygon Tool) the same way you did before. With these edges cut in start to shape them into the lips. Remember, the bottom lip is more defined, while the top lip flows right back into the mesh fairly easily. (Fig 06)


Fig 06
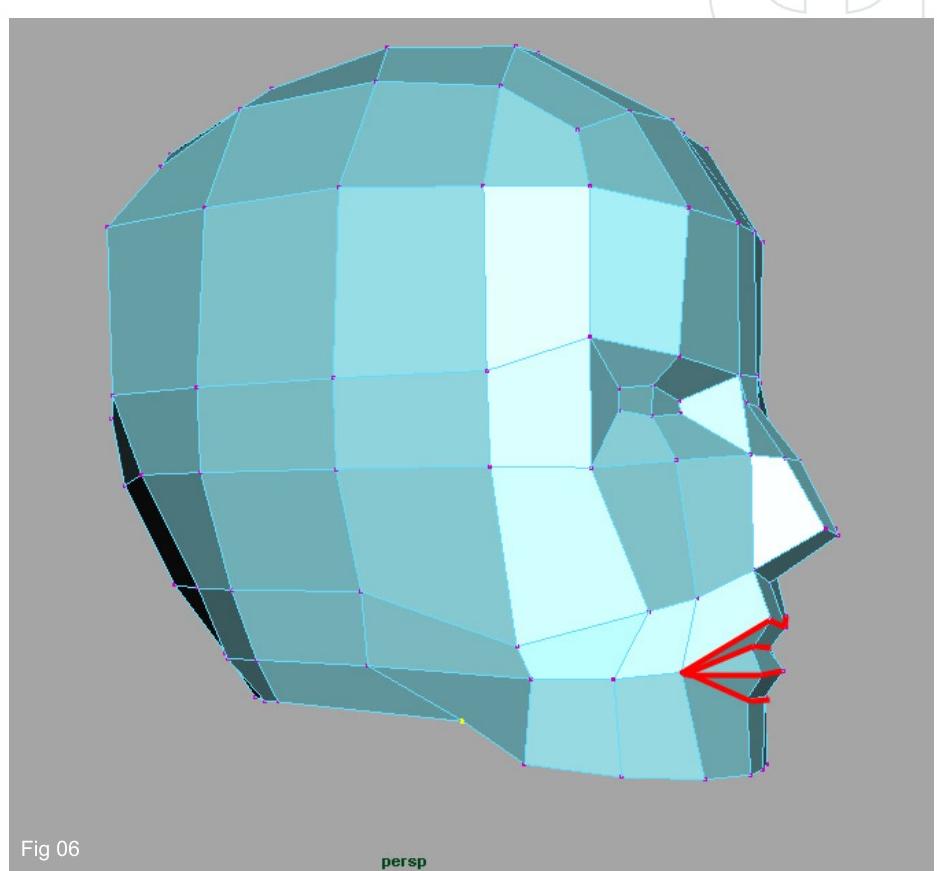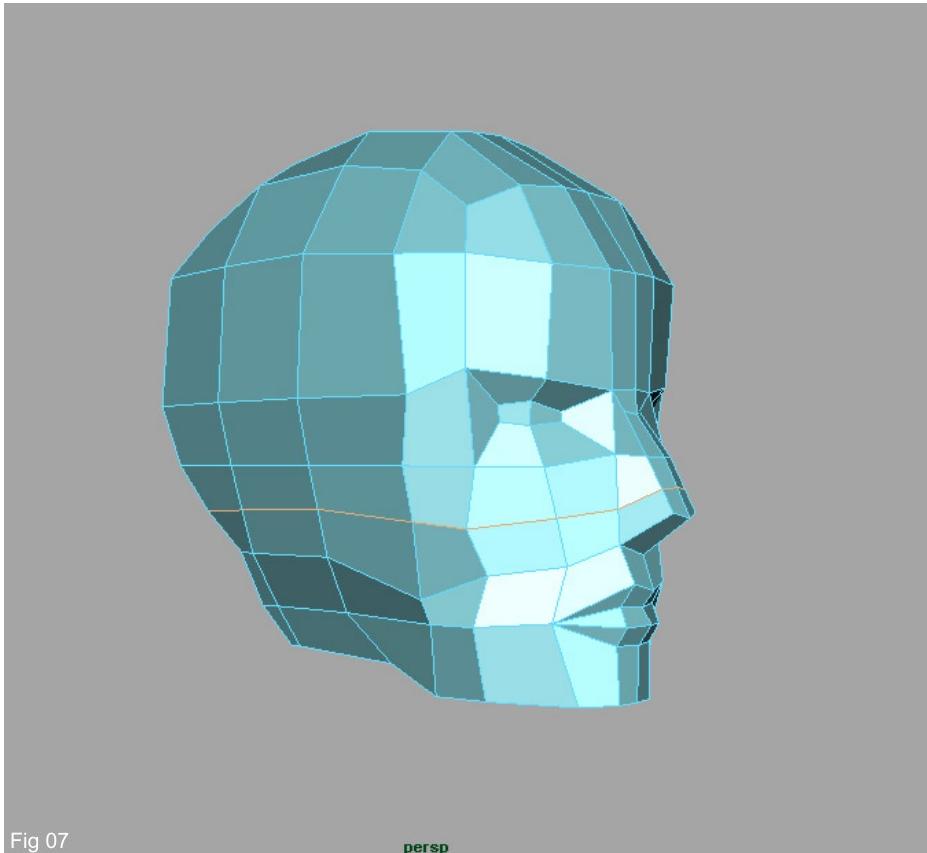
Fig 07

persp
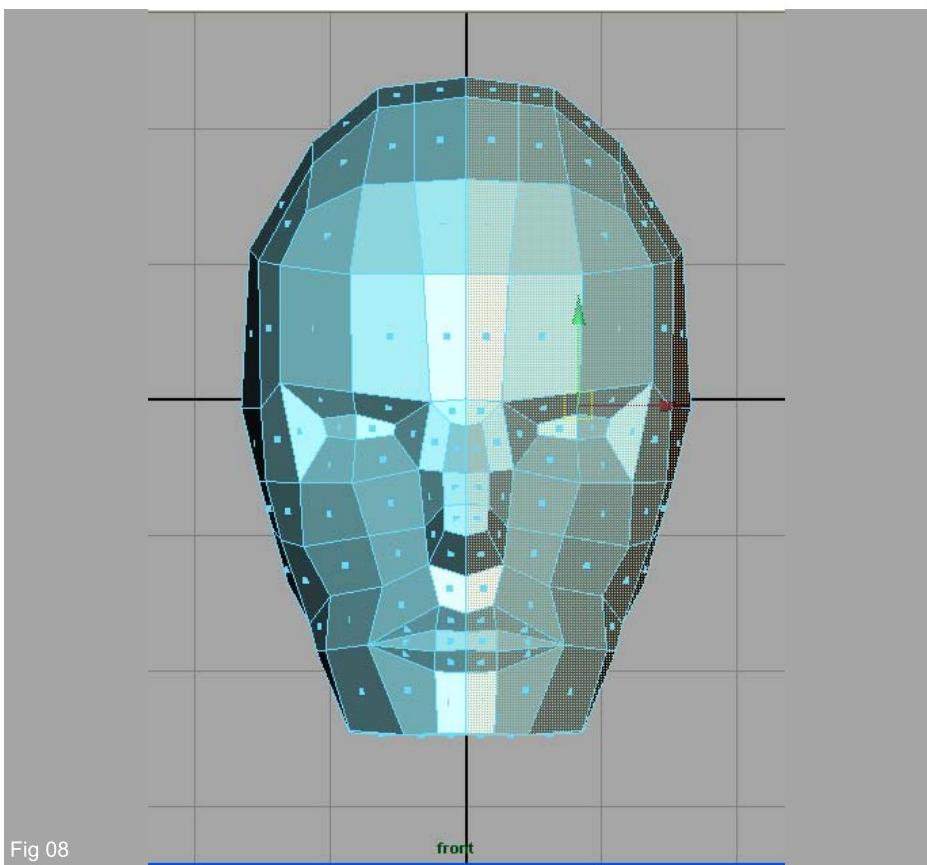
7. Cut another series of edges around the circumference on the entire mesh with the Split Poly Tool. Shape it into the mesh once it's been created. Now that we've got a start on all the basic features, really pay attention to the form and shape of the head. This is a low poly character, so you want every polygon pulling it's weight. Try to get a good solid dynamic shape to the head. It's also never a bad idea to check out references of how the skull and muscles of the head form either. (Fig 07)


Fig 08

front

8. Probably tired of modeling symmetrical features on both side aren't you? Lets fix that. Change component mode to "Face" (RMB click on the model to bring up the marquee menu and select face), and select all the faces on one half of the face and delete them. You only should have half of the head remaining. (Fig 08)

9. Select your halved head and duplicate it (Edit < Duplicate < Options Box). In the duplicate options box set the X Scale to "-1". This will mirror the geometry. Also, change geometry type to "instance". This will make your duplicate follow along with your original model as it's updated. Hit duplicate when you're done and you should have a mirrored version of your head. If it's not in the right place, move it so it's aligned properly with the original head. (Fig 09)
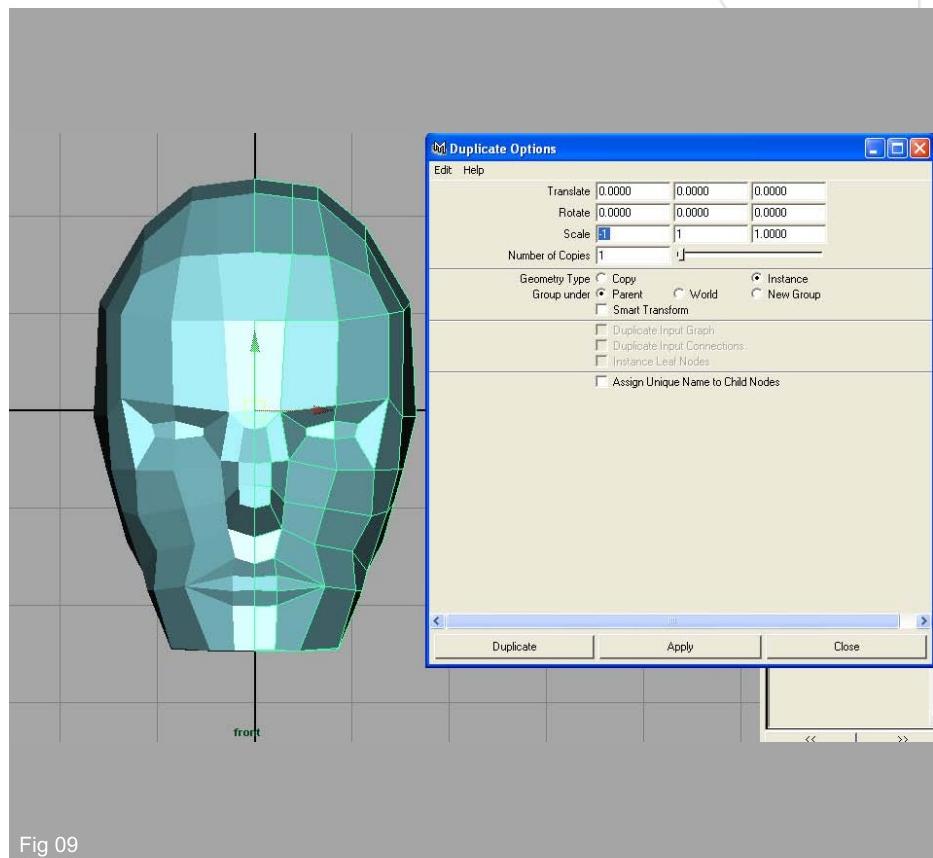
Fig 09

10. Always a good idea to just test it out and make sure the instance is working. Select one of the half's (doesn't matter which one), go into vertex component mode and try moving around a vertex. The corresponding vertex on the mirrored mesh should be mirroring your movements exactly. (Fig 10)
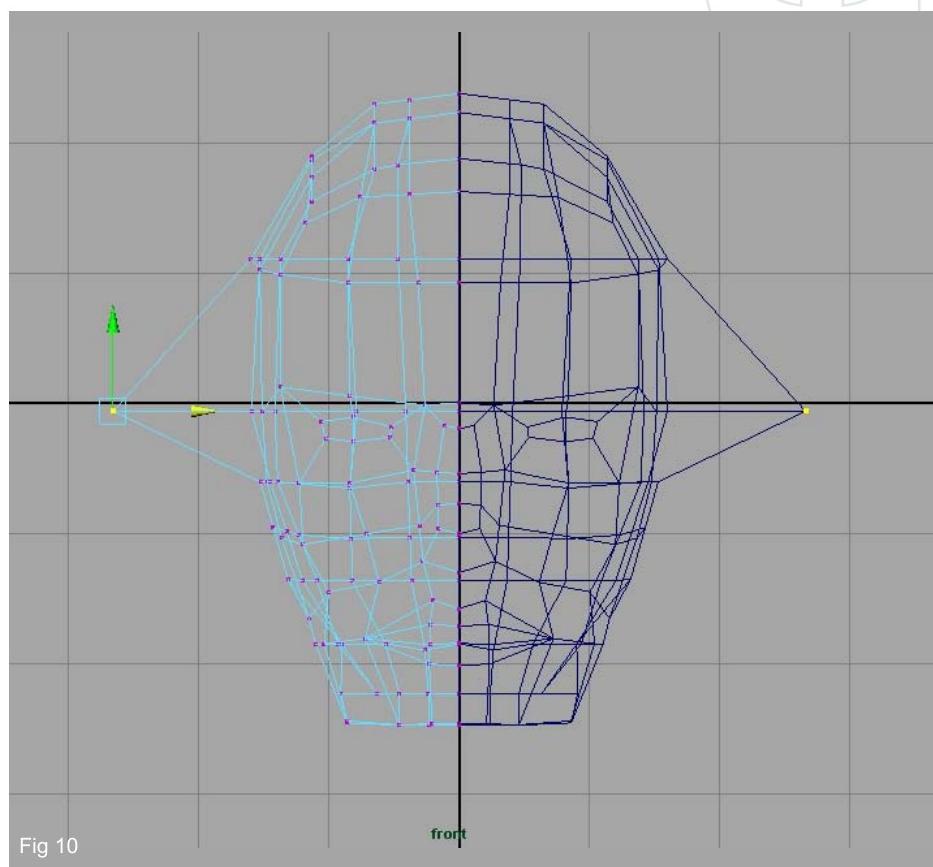

Fig 10
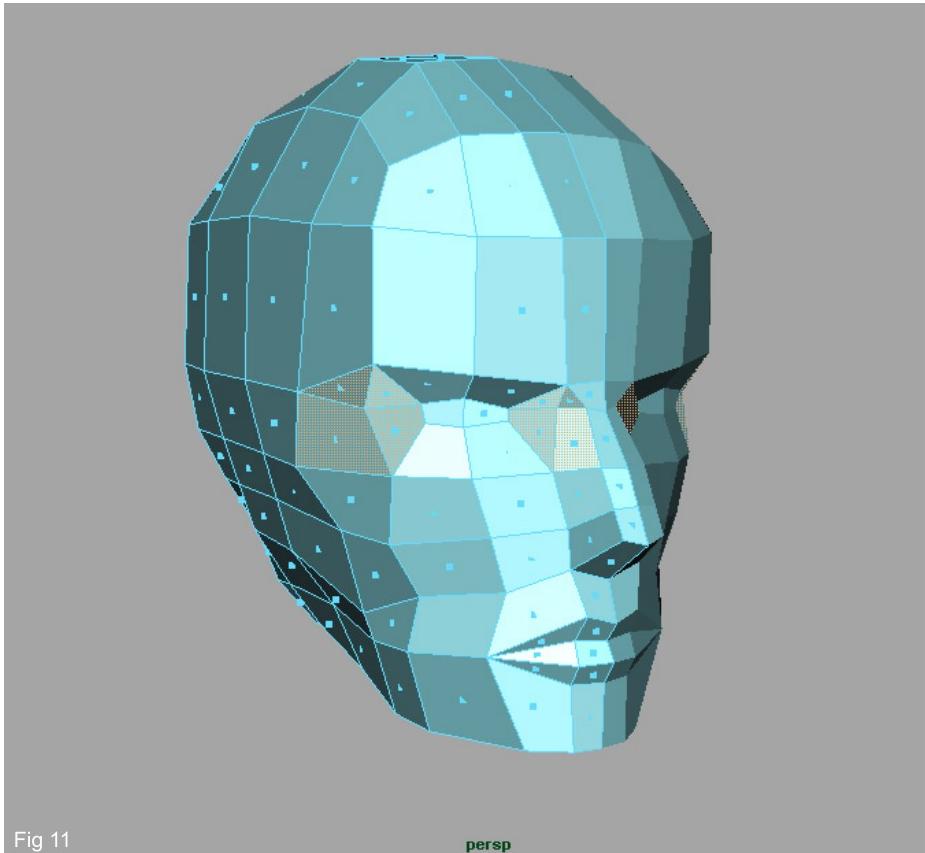
Fig 11

persp

11. Now we only have to work on one side of the head only and the other side will update with us. Using the Split polygon tool cut in a couple extra edges at the corners of the eye socket and shape them. This will create a slightly more convincing eye socket. (Fig 11)
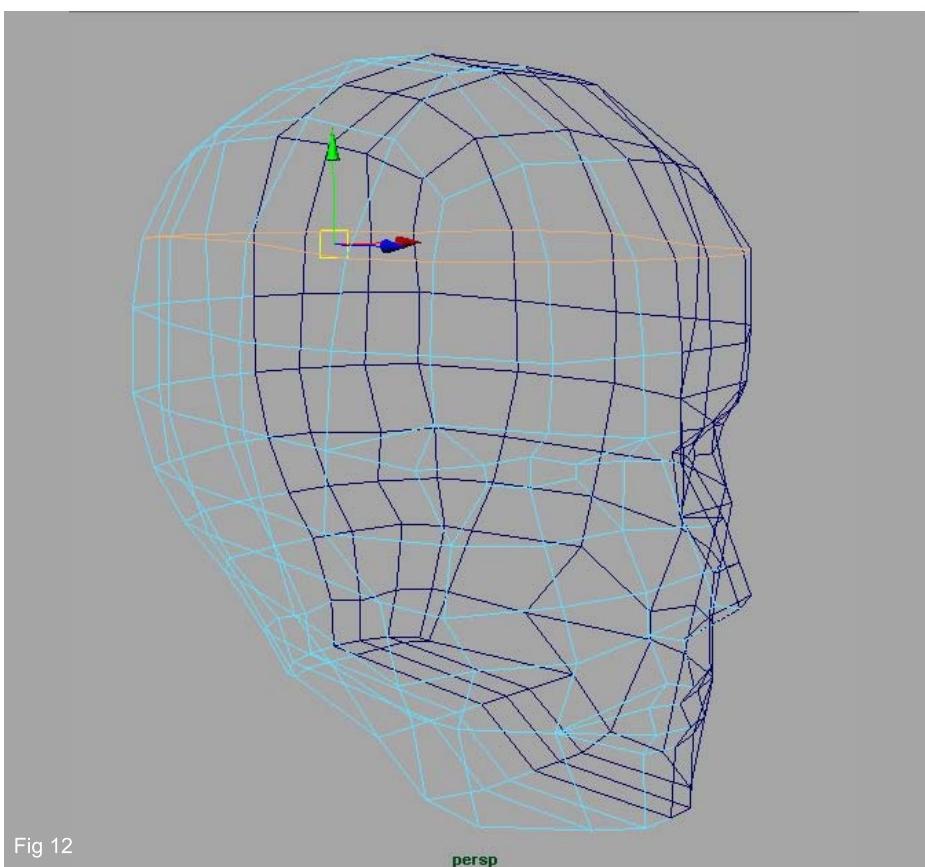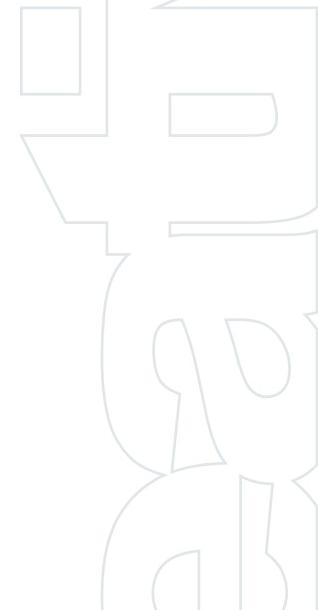

Fig 12

persp

12. Lets work on the forehead some. Select the highlighted edge and pull it up slightly. (Fig 12, 13)

Fig 13
persp
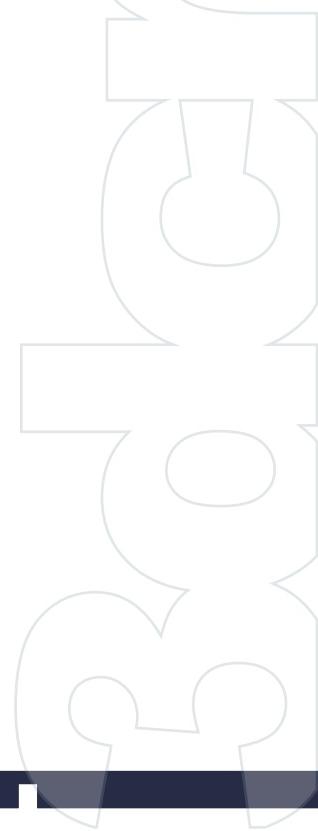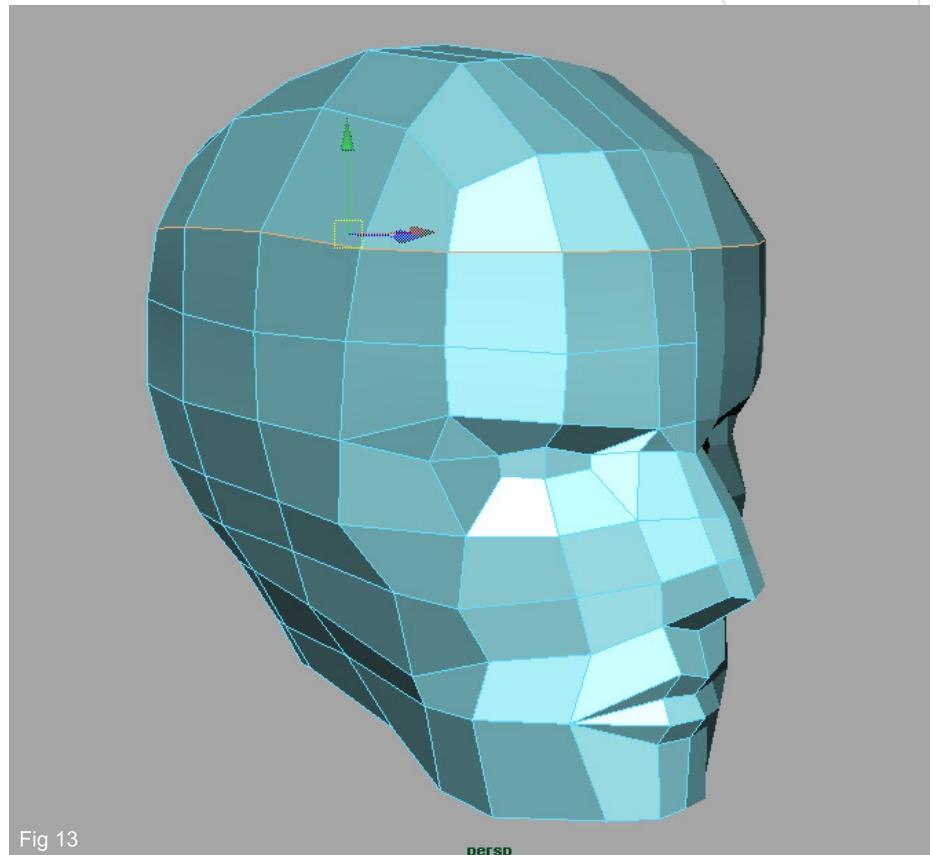
14. With the extra room now on the forehead split in a new edge around the whole head. Start shaping your forehead into a move convincing shape. Again, a good reference image of a skull is going to be an asset here. (Fig 14)


Fig 14
persp
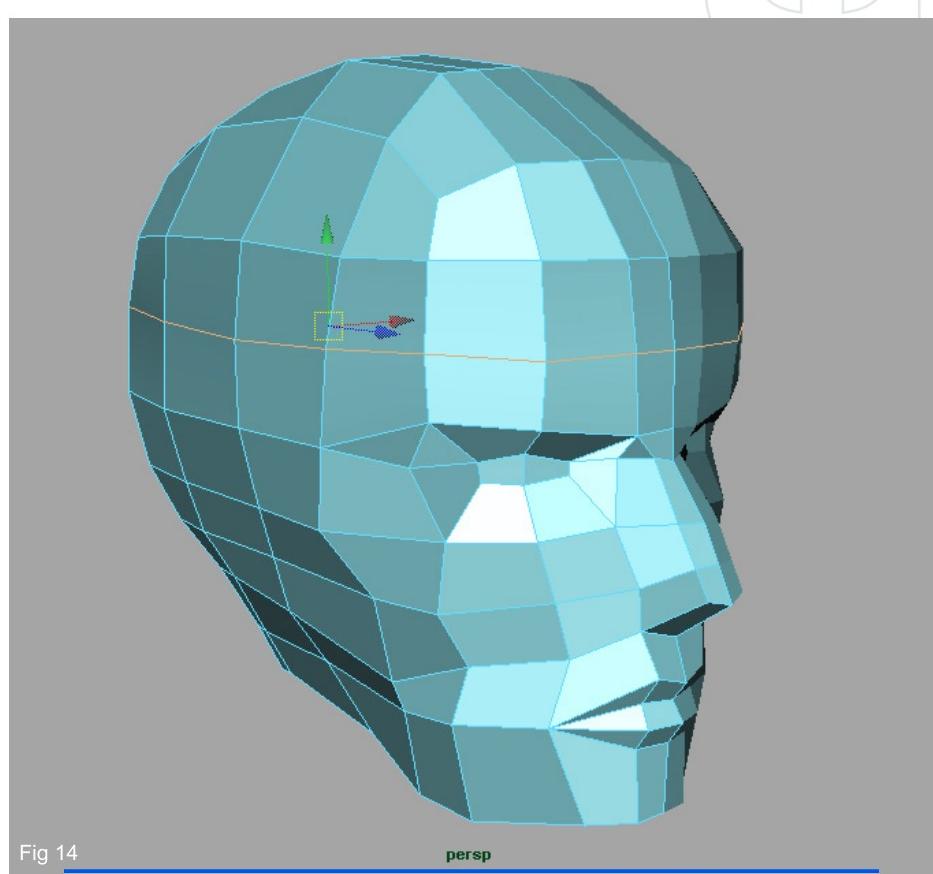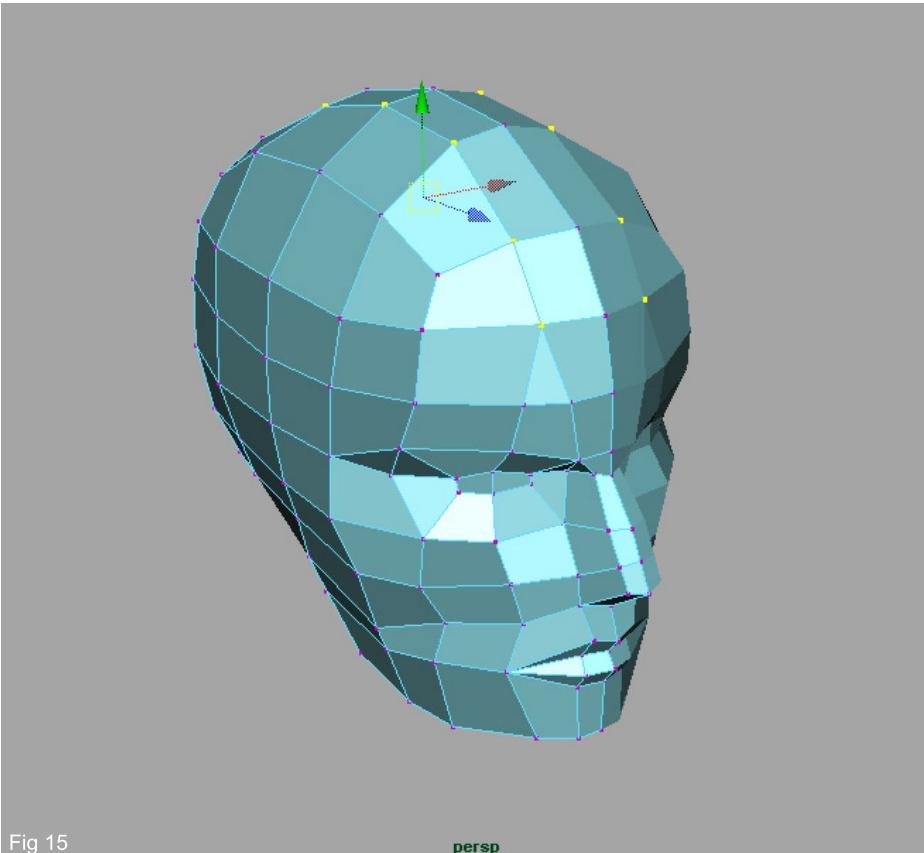
Fig 15
persp

15. Since this is a low poly character model, we should be looking to where we can optimize the mesh as we go along. Right now, there are more edges at the top of the head than needed, so we'll merge them together. Select the highlighted vertices and of the edges we want to merge and use the Merge Vertex Tool (Edit Polygon < Merge Vertice < Option box). In the option box keep raising the distance level until your verts finally merge together to form one single mesh. If you have to set the distance too high, and they all merge to one point, repeat this step, only merging two verts of the edges at a time. Once you've only got the 1 edge up there, continue to shape the head. (Fig 15)
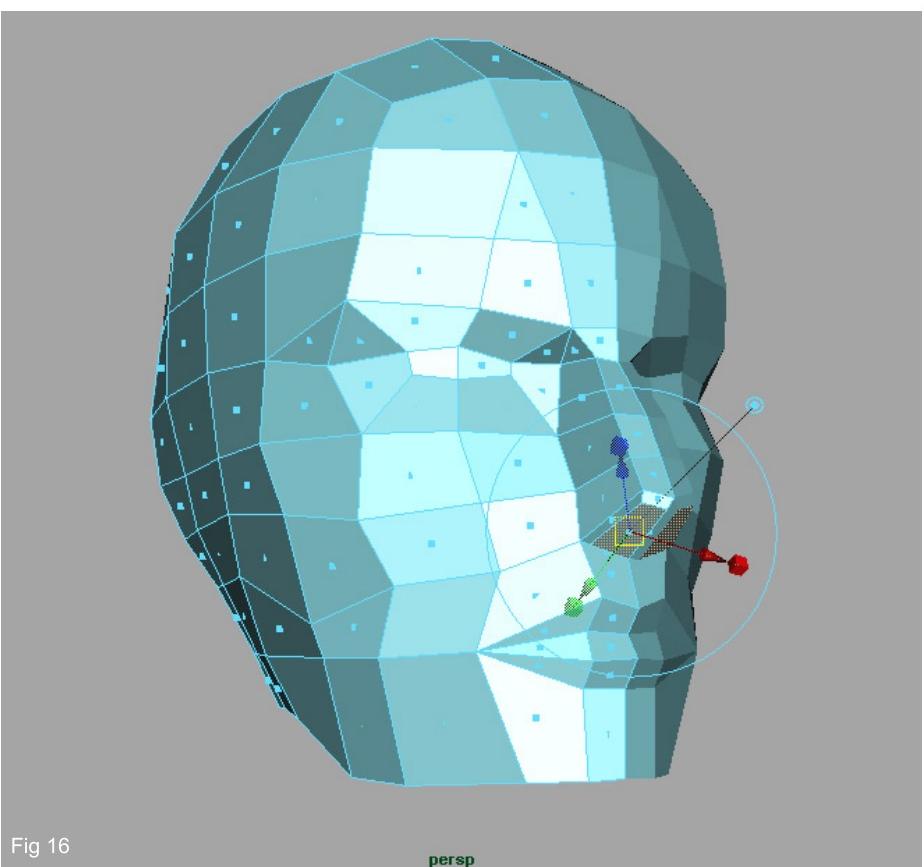

Fig 16
persp

16. Extrude out the face at the bottom of the nose to add a bit more dimension to the nose. (Fig 16)

17. With the face extrude out, merge together the vets at the very base of the nose. That's extra definition we don't need for this model. (Fig 17)


Fig 17

persp
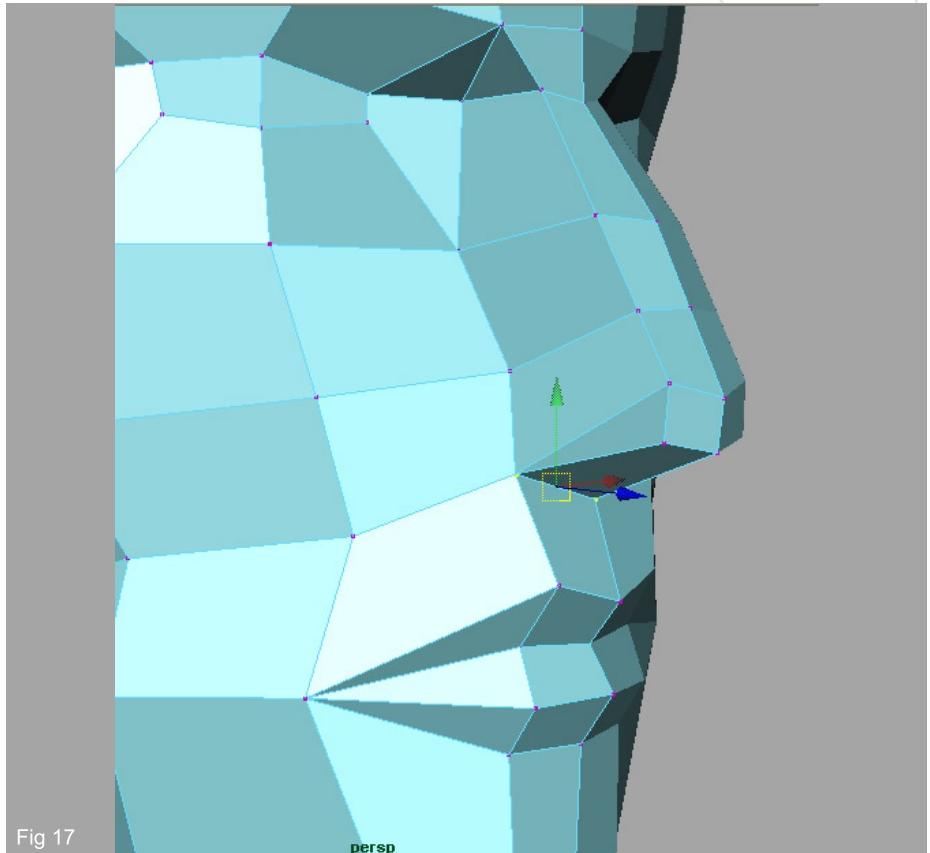
18. Split in another edge running around the entire head. As always, keep shaping the entire head as you go along. You've got a whole month till the next section of the tutorial, so don't rush anything. Take your time, and get the most out of those polys! (Fig 18)


Fig 18

persp
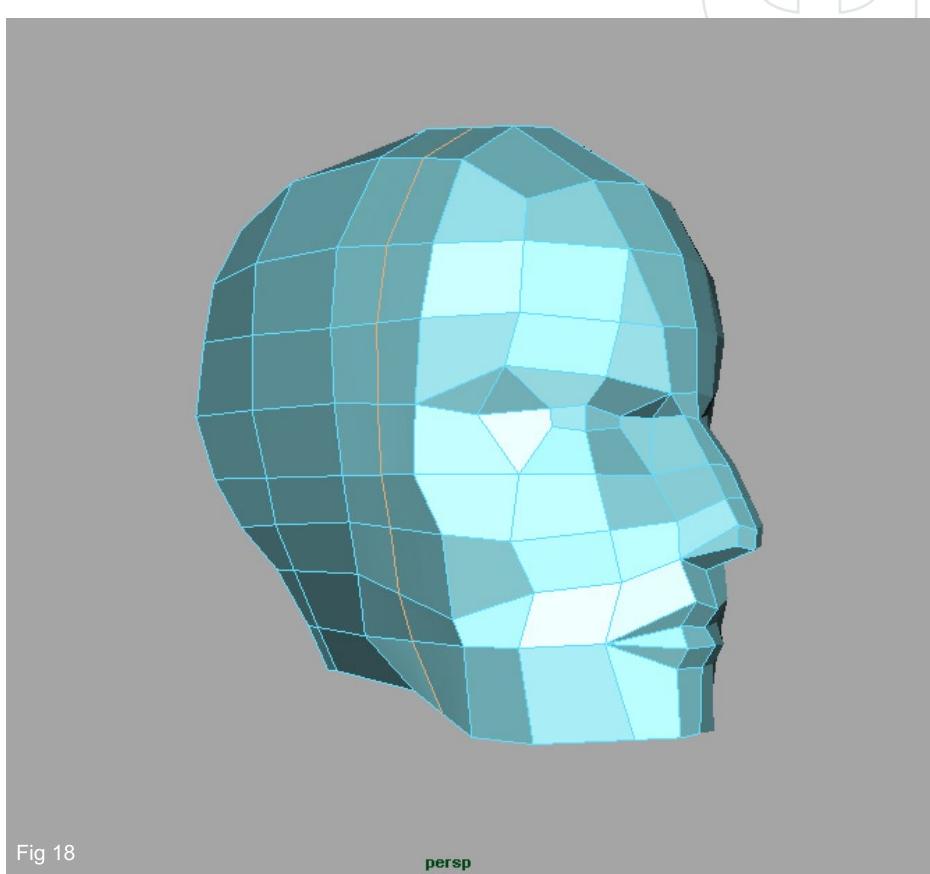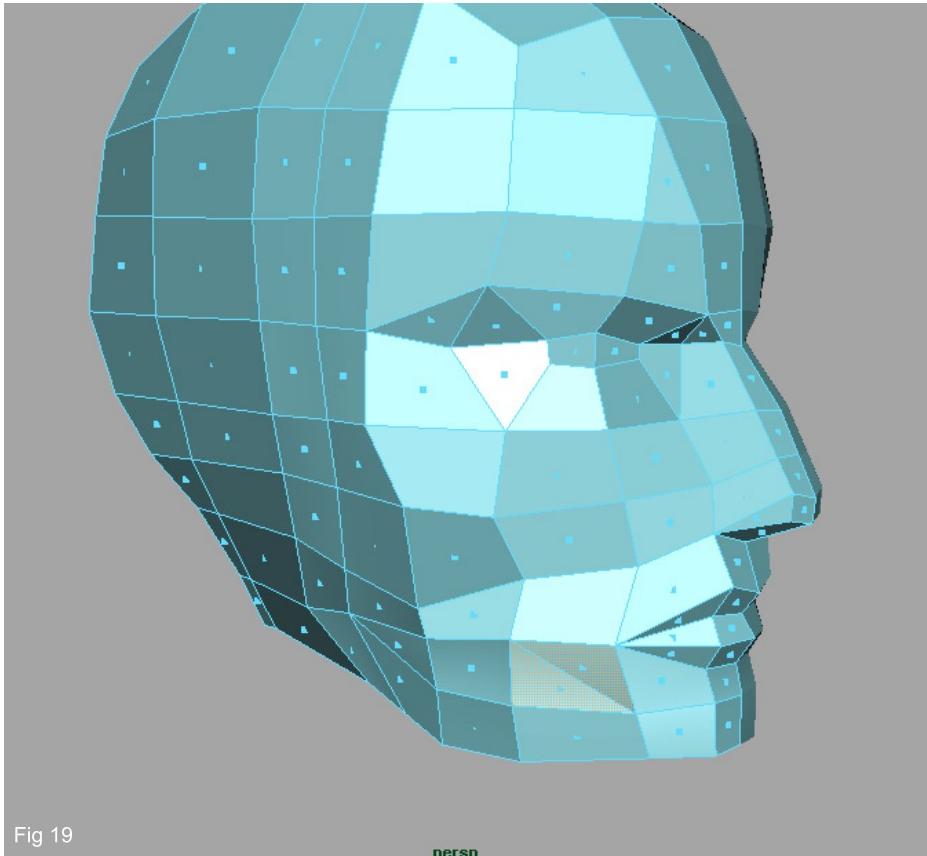
Fig 19
persp

19. Split in another couple of edge, this time to give the chin some more definition. Try to get a nice shape on the jaw and chin. (Fig 19)
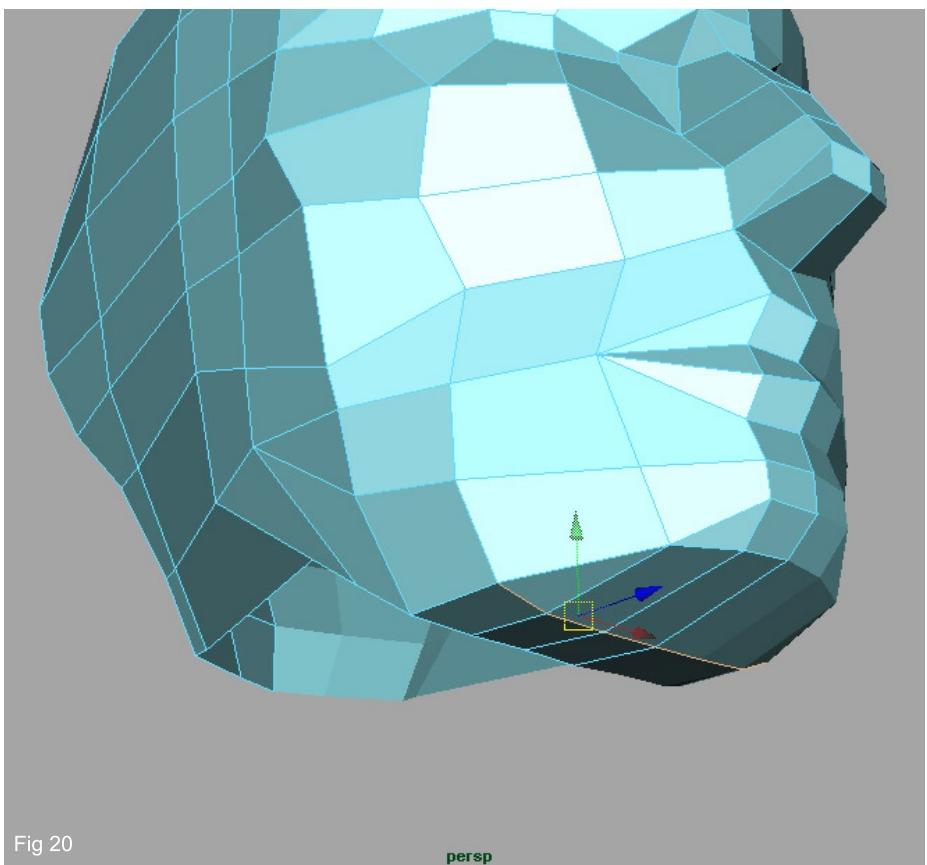

Fig 20
persp

20. Lets get rid of that very flat underside of the chin. Slice in a new edge running under the chin. Adjust the verts to give the bottom side of the chin some more roundness. (Fig 20)

21. Merge together the highlighted vertices to reduce your poly count. (Fig 21)

Fig 21   persp
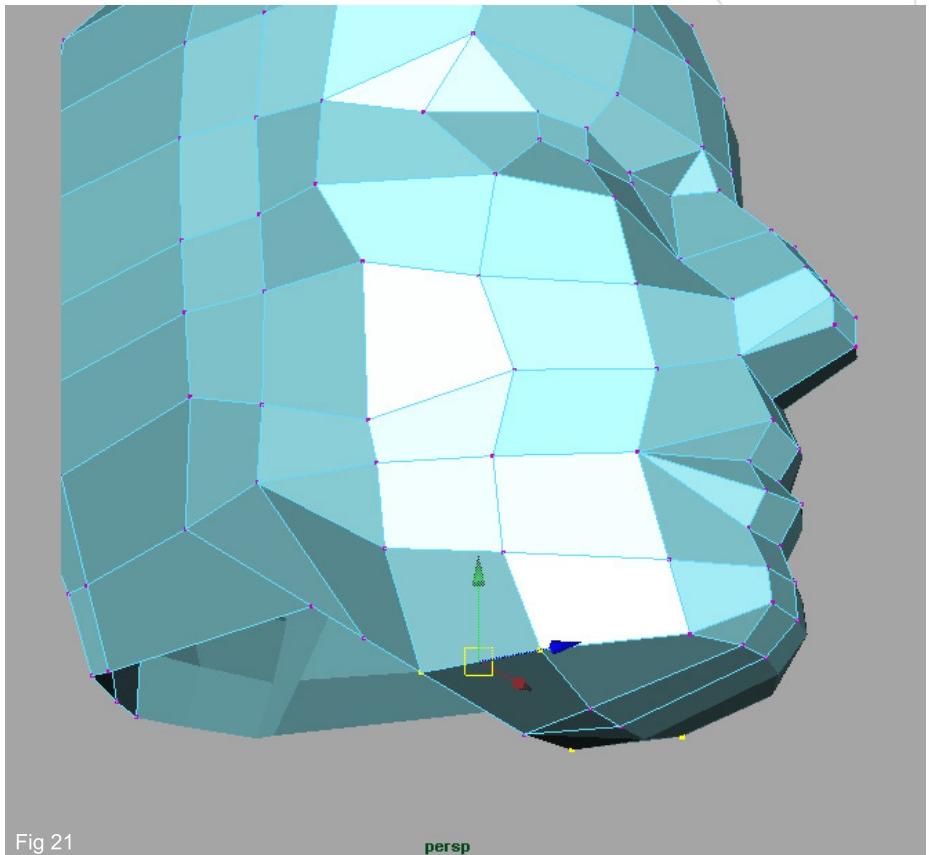
22. Ears are a rather luxurious commodity on low poly models, so for this guy we're going to keep things real simple. Start by setting up the highlighted edges into a fairly basic ear shape. (Fig 22)

Fig 22   persp
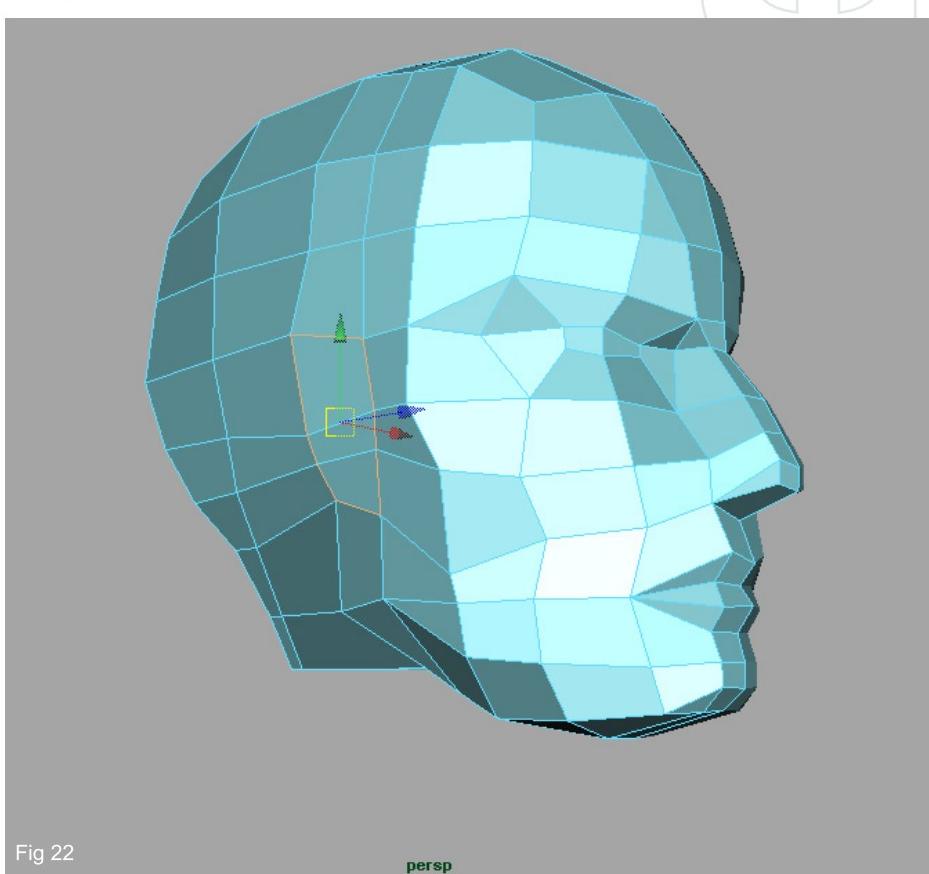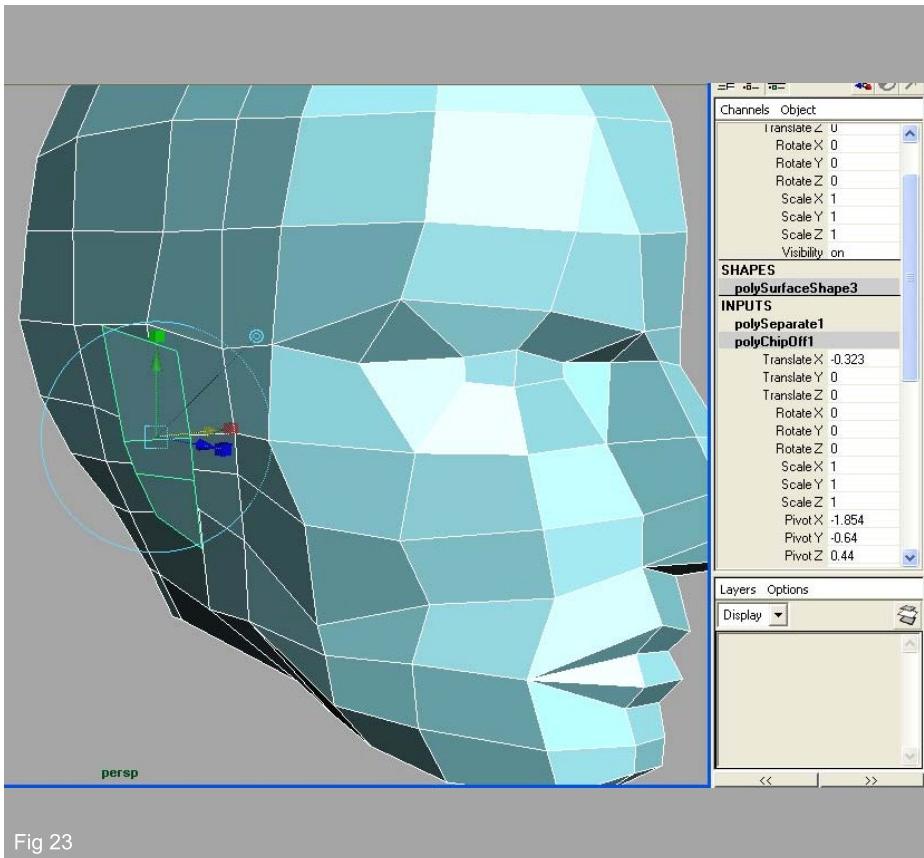
Fig 23

23. Select the 3 faces of the ear and duplicate the faces (Edit Polygon < Duplicate Face < Option Box). In the duplicate face options box make sure "Separate Duplicated Faces" is turned OFF (otherwise the duplicated faces will be a brand new object). Once duplicated, move the faces off to the side of the head slightly. (Fig 23)
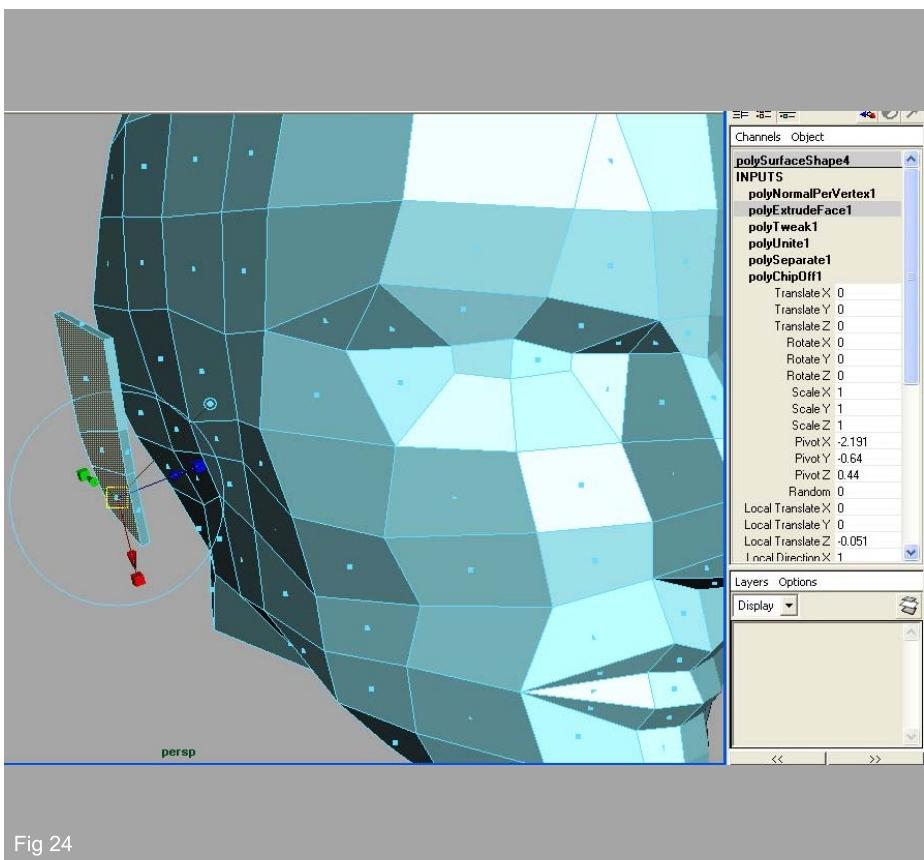

Fig 24

24. Select the faces of the ear and extrude them (Edit Polygon < Extrude Face) to give a bit of depth to the ear itself. (Fig 24)

25. We've got an ear shape with some depth now, but it's got a big hole on one side. To fill the whole select one of the open edges and Fill Hole (Edit Polygon < Fill Hole), and it will create a new polygon to fill in the open side of the ear. This will only be 1 single multi-sided polygon though, so we need to connect the edges on either side of this polygon, so we can keep everything in quads. (Fig 25)
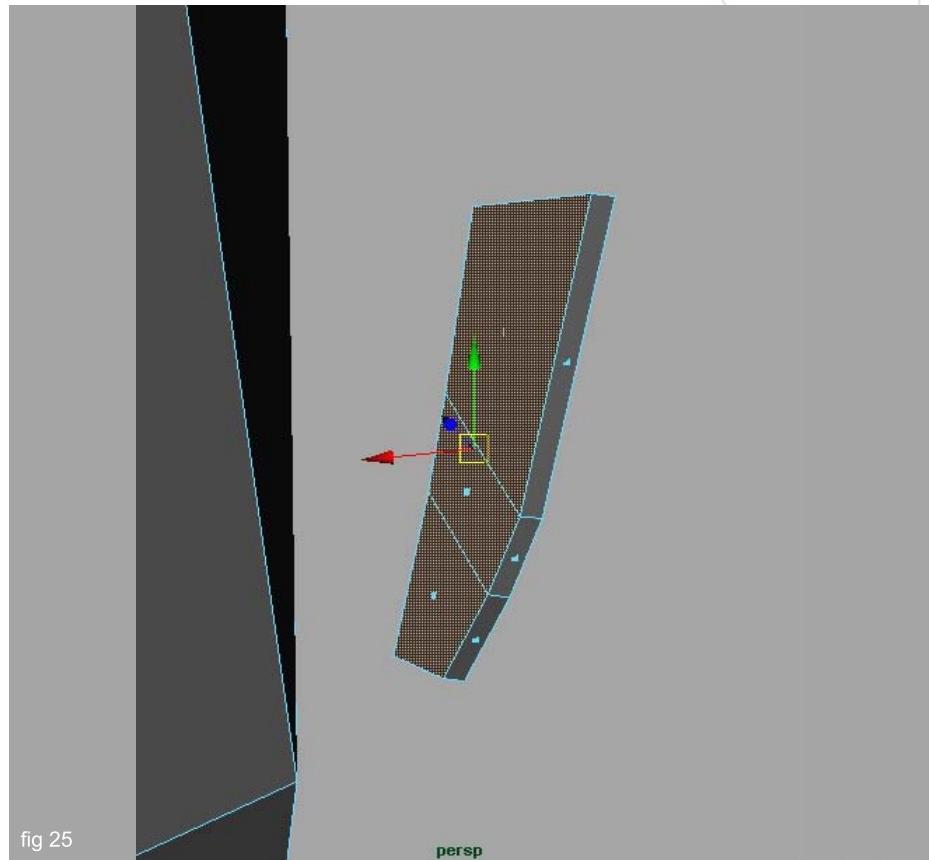
26. Now we can just attach the ear back to head. Move the ear back into roughly the correct position and then vertex snap the verts of the ear back to the head (hold down the V key, and middle mouse button click and move the vertex. The vert will snap to the nearest vert where your mouse cursor is). Once the verts are snapped to the same position, select all the snapped verts and hit the merge vertice tool (Edit Polygon < Merge Vertice), to merge them all back together on the same edge. Re-position and shape the ear once it's all back together with the head. (Fig 26)

Wooh, we have a fairly solid head going here now. You may want to adjust your normals to loose that flat faceted (either using the Edit Polygon < Normals < Average Normals or Smooth/Harden Normals) look to your faces Again, keep working on adjusting the shape and form of the head. Modelling is a very organic processes, and though this tutorial breaks everything down to a step by step process, it's best that you try to develop as much as you can at the same time. That's why it's important to keep working on the whole mesh as each subsequent definition is added. You should have a pretty good knowledge of the basic modeling tools, and really these are the only tools you need to know to create pretty much anything.


fig 25 persp

fig 26 persp

swordmaster

Top

Back

Profile

Front
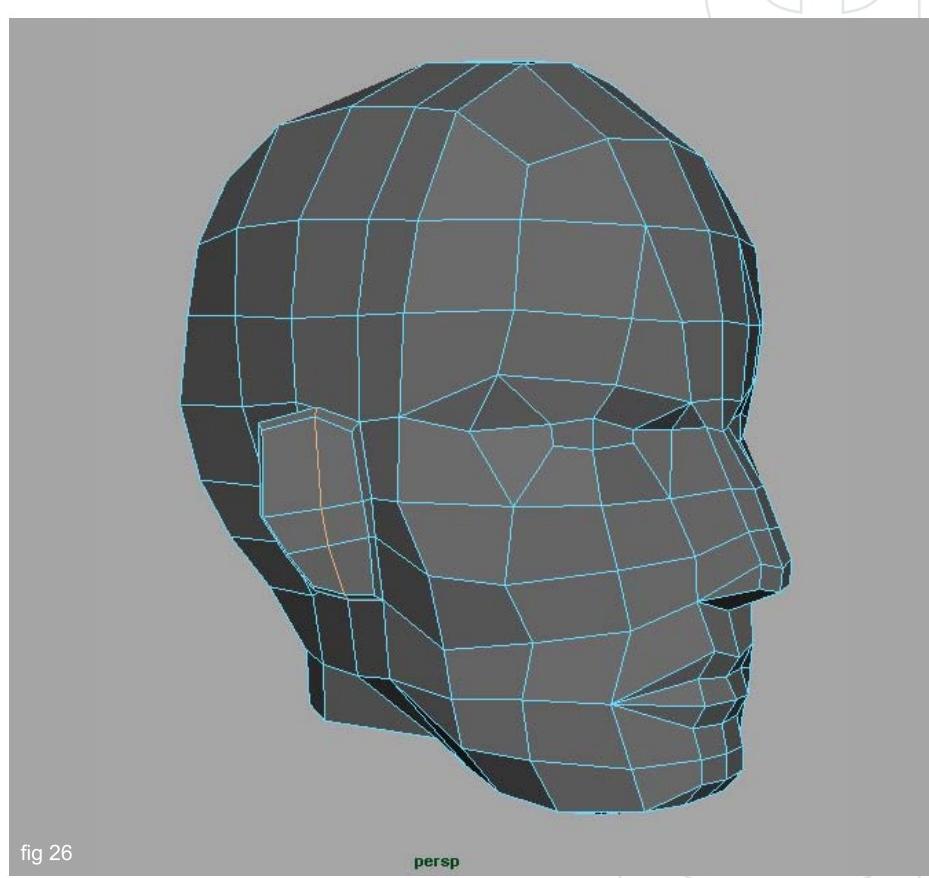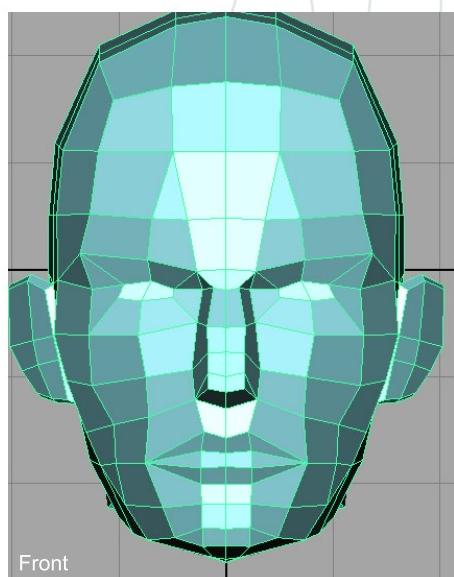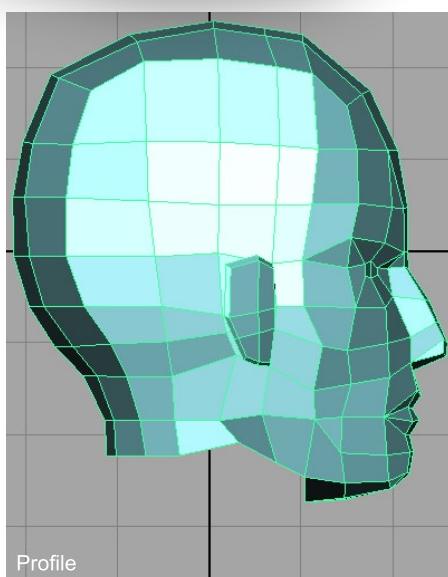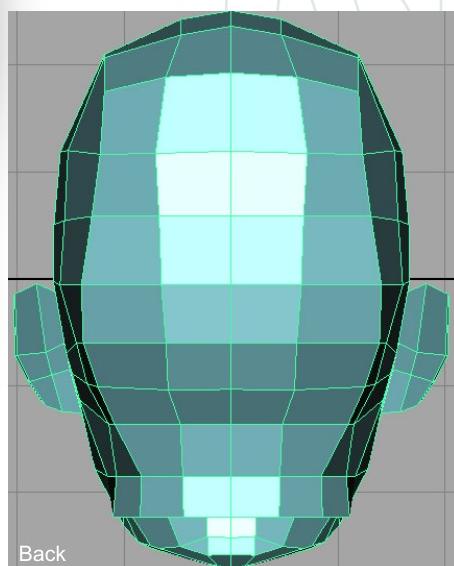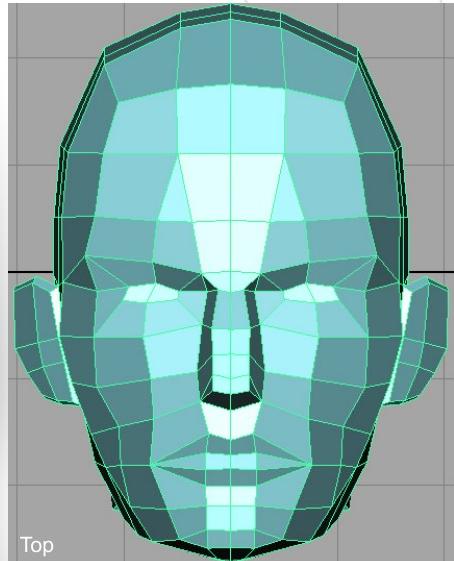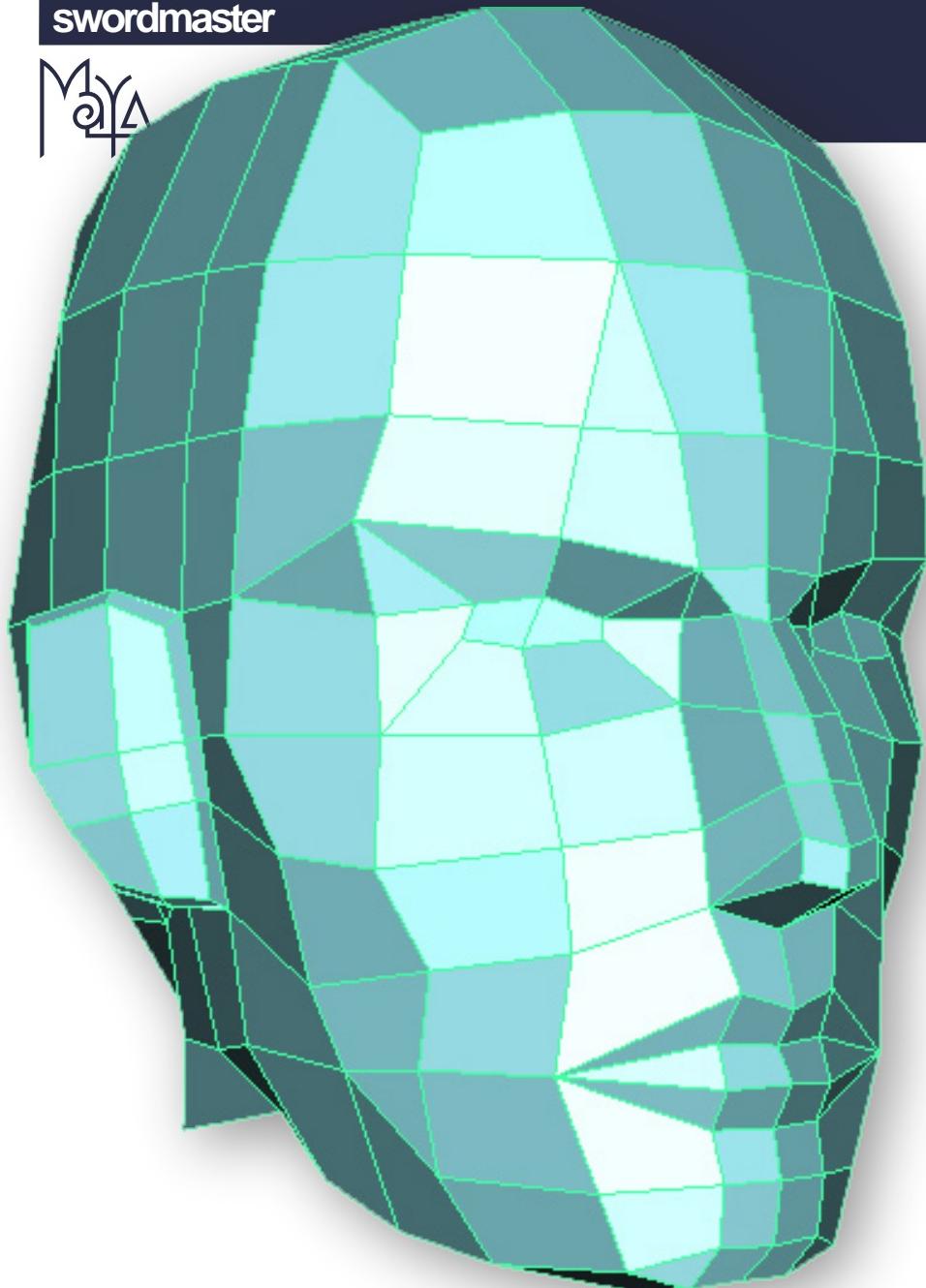
Next month we'll start work on building a low poly torso for our character. Good luck modelling until then!

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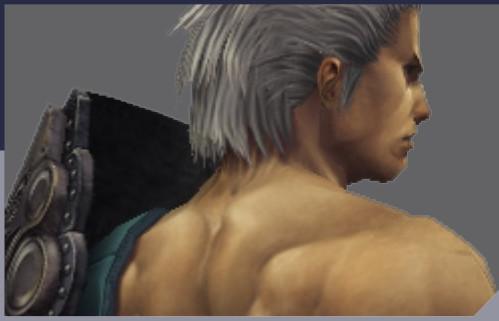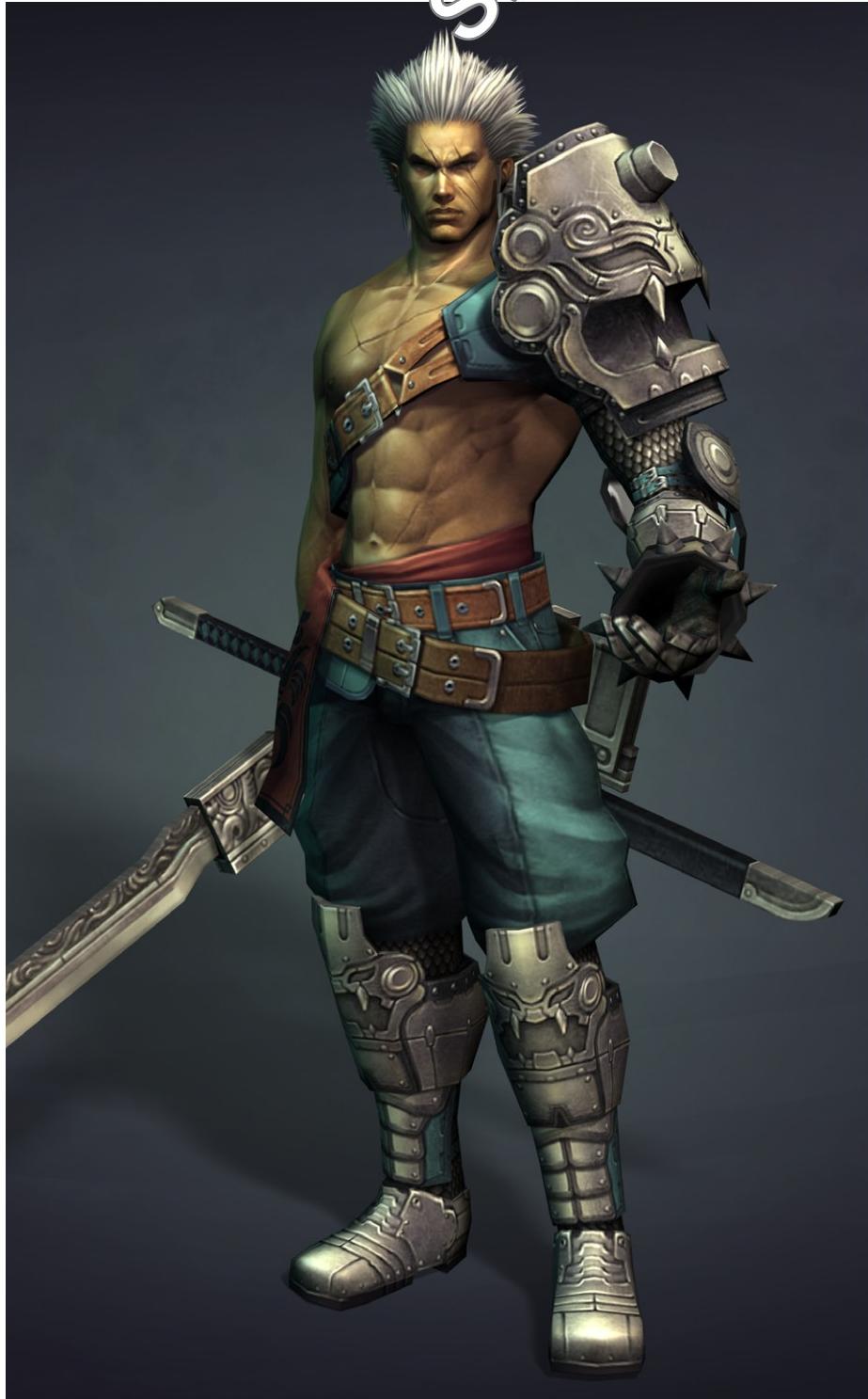
THE SWORDMASTER

SOFTIMAGE®|XSI

Is our new precise, step by step tutorial for highly polished, low polygon game character with detailed texturing for real-time rendering. We have had the tutorial created for the 5 major 3d applications, but even if you are not a user of one of them, the principles should be easily followed in nearly all other 3d applications. Over the next 8 months we will outline in detail the process for creating the 'Swordmaster' you see on the left. The schedule for the different parts of the tutorial is as follows:

Enjoy ...

PART 1
MODELING THE HEAD

INTRODUCTION

In this tutorial we will create a low-poly character for a real-time 3D game. We will start creating the head, and in the following parts we will model the rest of the body, the armour and the clothes; we will also unwrap the texture coordinates and create a nice texture for this character with a 2D painting program. This month we'll start creating the head out of a simple poly-mesh cube.

1. Let's start creating a PolyMesh Cube (Get > Primitive > Polygon Mesh > Cube); in the Property window, set 4 subdivisions for each dimension (U, V and Base); also, remember to give this mesh a significant name (for example, "Head") like shown in Fig01:
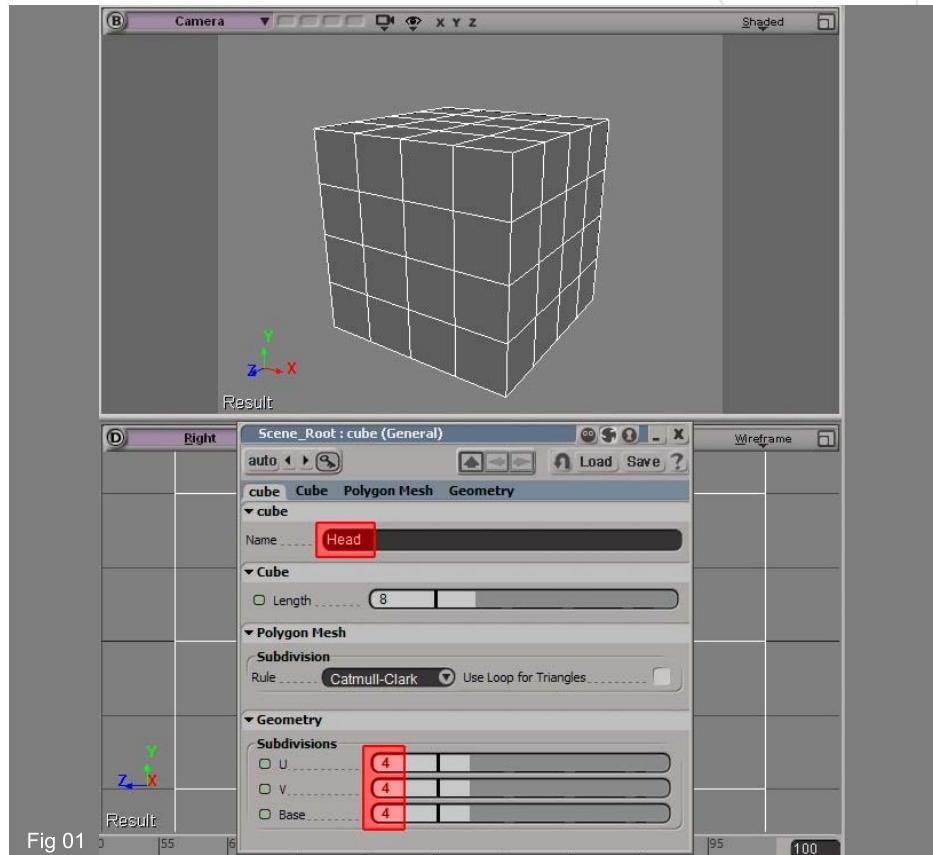
2. Now it's time to go to sub-object level ("t" shortcut key for the vertices, "i" for the edges and "u" for the polygons) and reshape the cube to make it roughly match with the shape of a head (Fig02). You can start in the Right view, adjust the profile of the head, and then switch to the Front and Camera view to continue shaping the mesh:

Fig 01

Fig 02
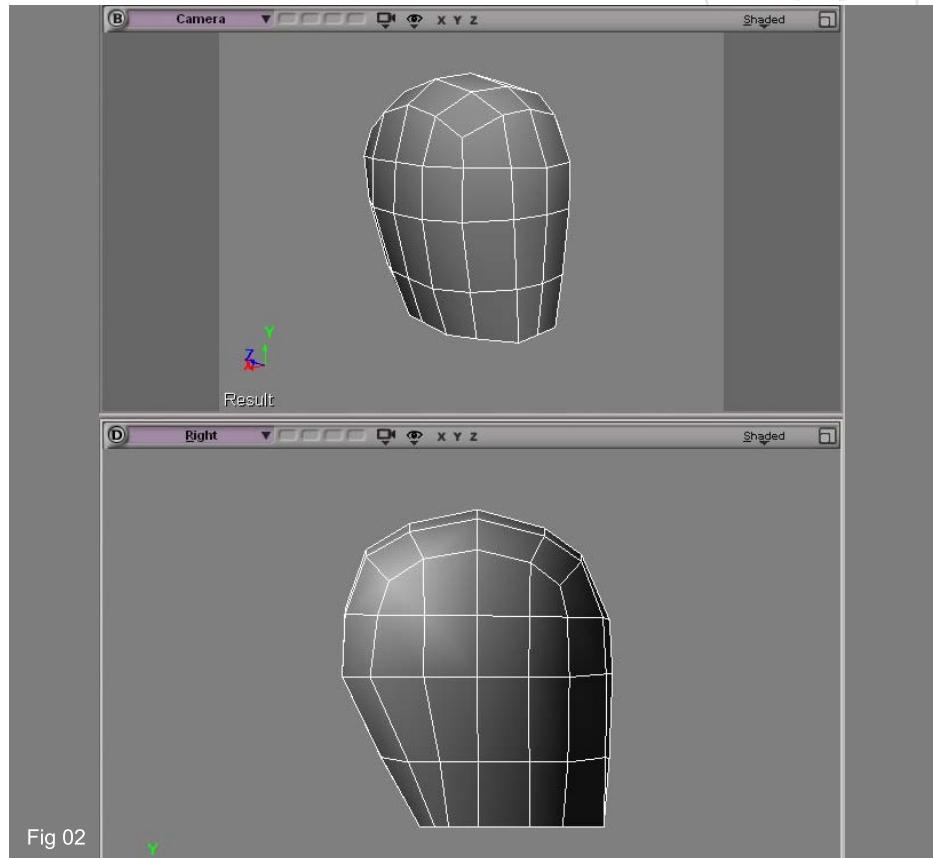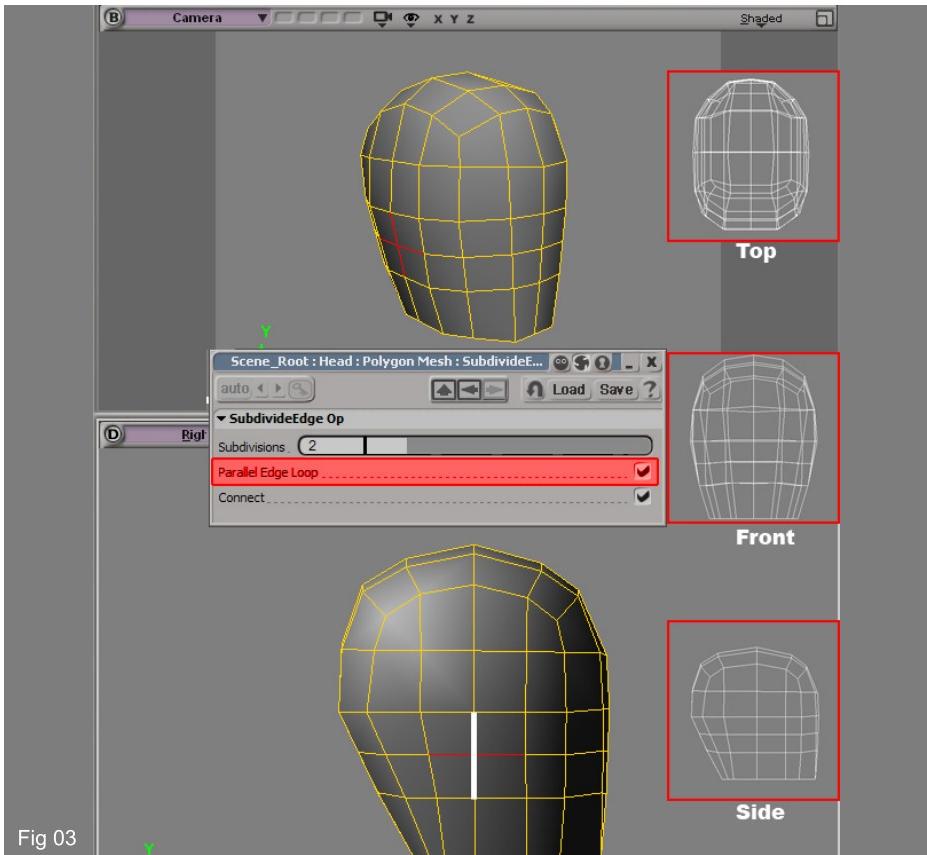
Fig 03

3. We need to add a loop of edges in the lower part of the head; Select the edge marked in white in Fig03 and use the shortcut Shift + D to subdivide it; not forgetting to activate the Parallel Edge Loop in the Property page to subdivide the mesh all around. Also, leave the number of Subdivision as it is, and make sure that Connect is activated:
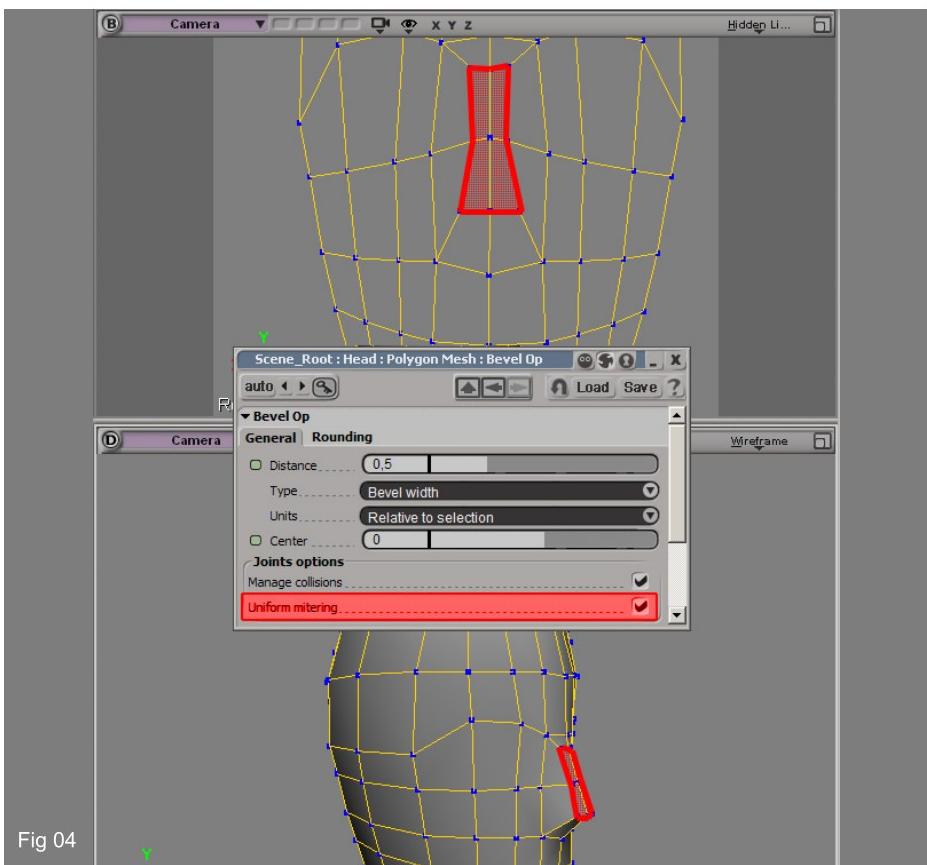
Fig 04

4. We can now start to create the necessary elements to model some interesting features like the nose. Select the central polygons (marked in red in Fig04) and use the Bevel operator to bring them out. Don't forget to enable the Uniform Mitering option in the Bevel property page, to obtain a regular beveling of the edges. Also, scale the polygons down a bit and translate/rotate them if needed.

5. Select the two polygons marked in red in Fig05 and apply a Bevel operator (don't forget to activate the Uniform Mitering option in the Bevel property page. Next, take some time to adjust the vertices and the two new polygons created by the Bevel operator, to obtein something similar to Fig05:
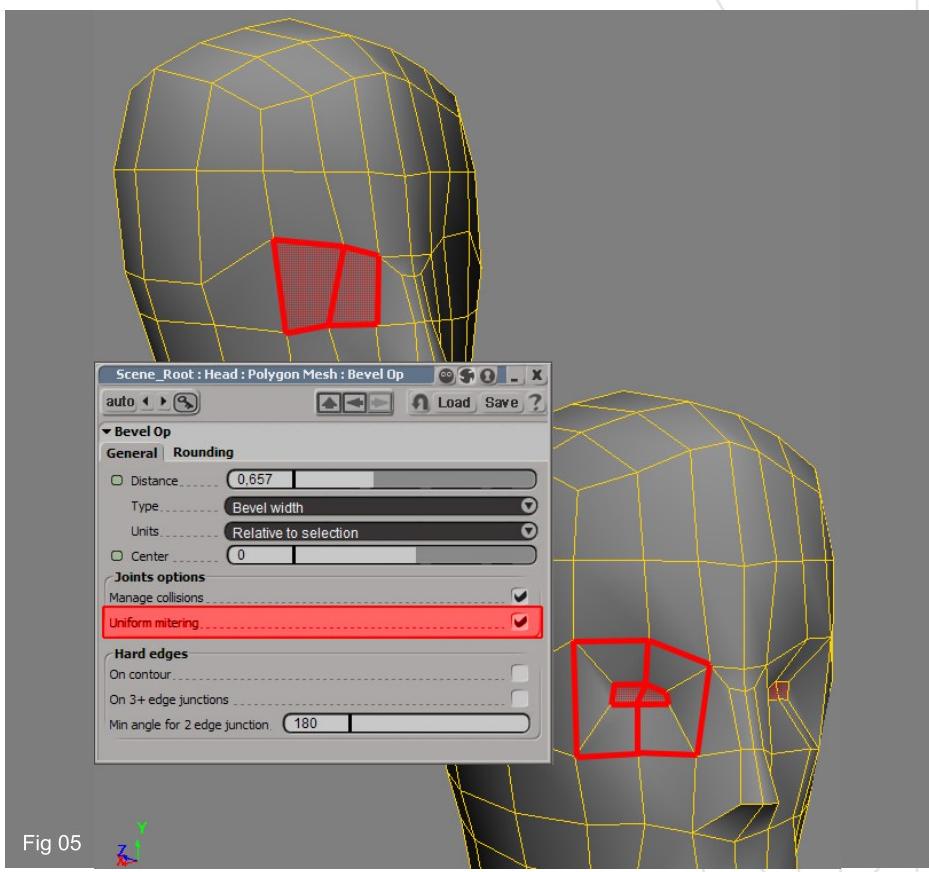

Fig 05

6. Now let's concentrate on the area marked in yellow in Fig06, the mouth area. It is made up of four big polygons. We already have an edgeloop for the lips but we need three more cuts to detail this area of the mesh. Use the Add Edge tool (shortcut key: "\") to create the three new cuts (marked in red in Fig06). As usual, take some time to adjust the vertices and give the lips a better shape:
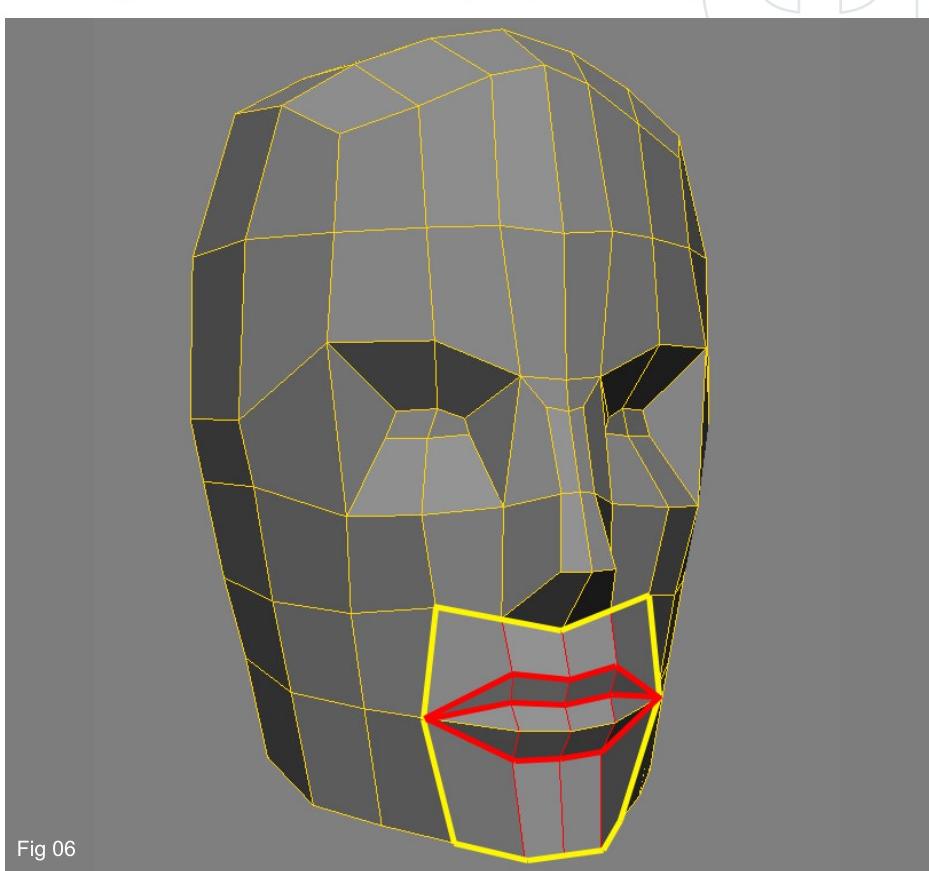

Fig 06
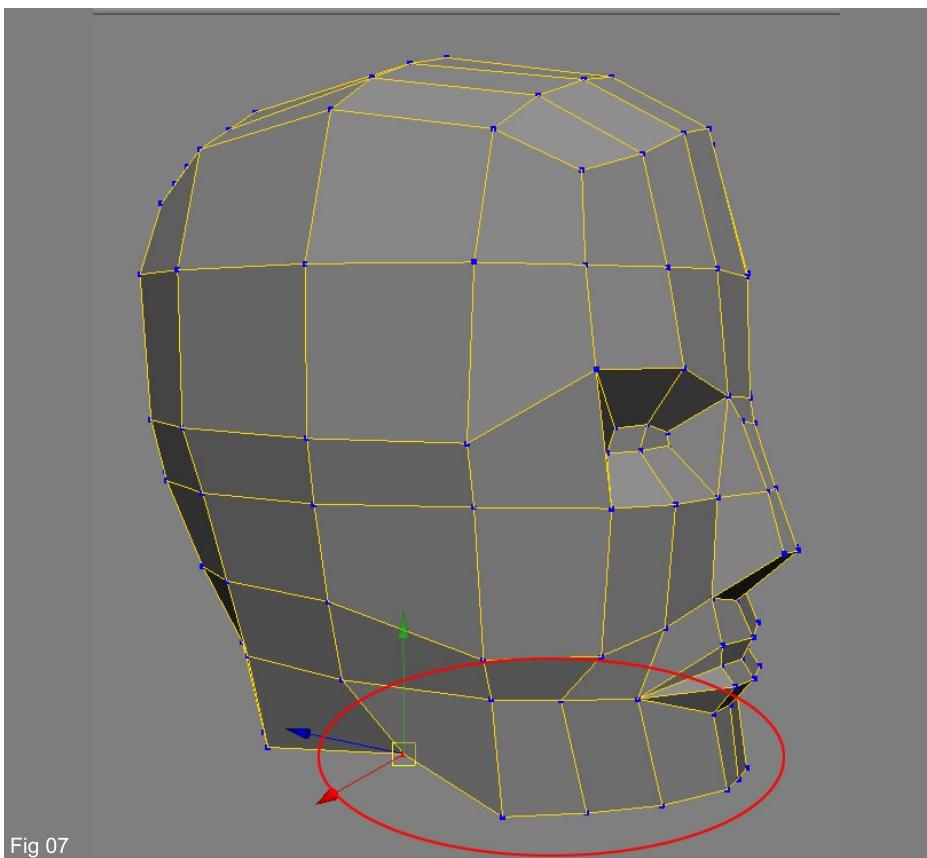
Fig 07

7. Have a look at the vertices at the bottom of the head (marked in red in Fig07), and try to move them around to give this area the look of jaw and chin. You don't have to go into detail right now, just try to create a basic shape for this area of the mesh:
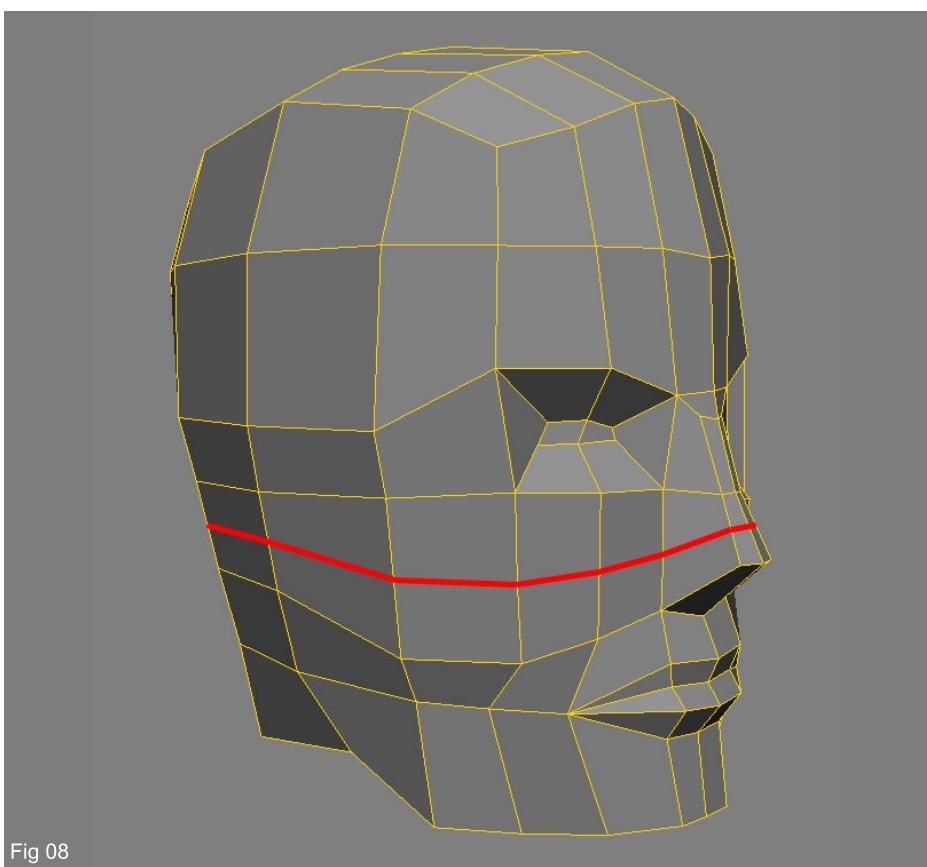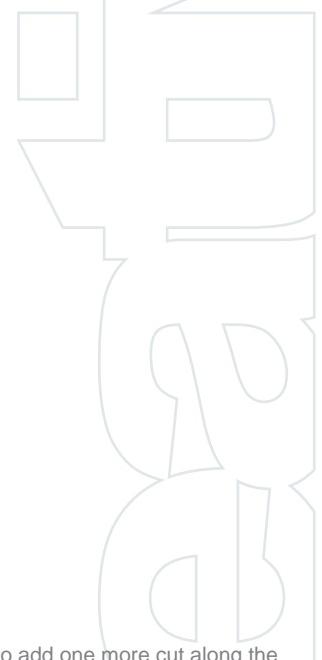

Fig 08

8. We need to add one more cut along the whole mesh to better refine the nose and cheek area. Select the edge ring (Alt + MMB on one edge of the ring) and Subdivide it (Shift + D):
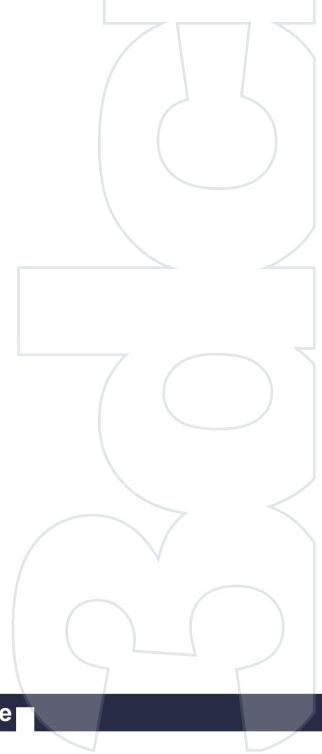
9. It is time to mirror the polygons of one half of the head, so we only need to work on one half. Select a half of the mesh (use the Y shortcut key to rectangle-select the polygons) and delete them (1 on Fig09); then use the Clone tool (Edit -> Duplicate/Instantiate -> Clone Single) (2 on Fig09) to create a perfect clone of the half remaining. Scale this new half by -1 on its X axis (3 on Fig09); this will make the new half a mirrored copy of the original mesh. Finally, try to move around a vertex and see how it affects both the halves (4 on Fig09):
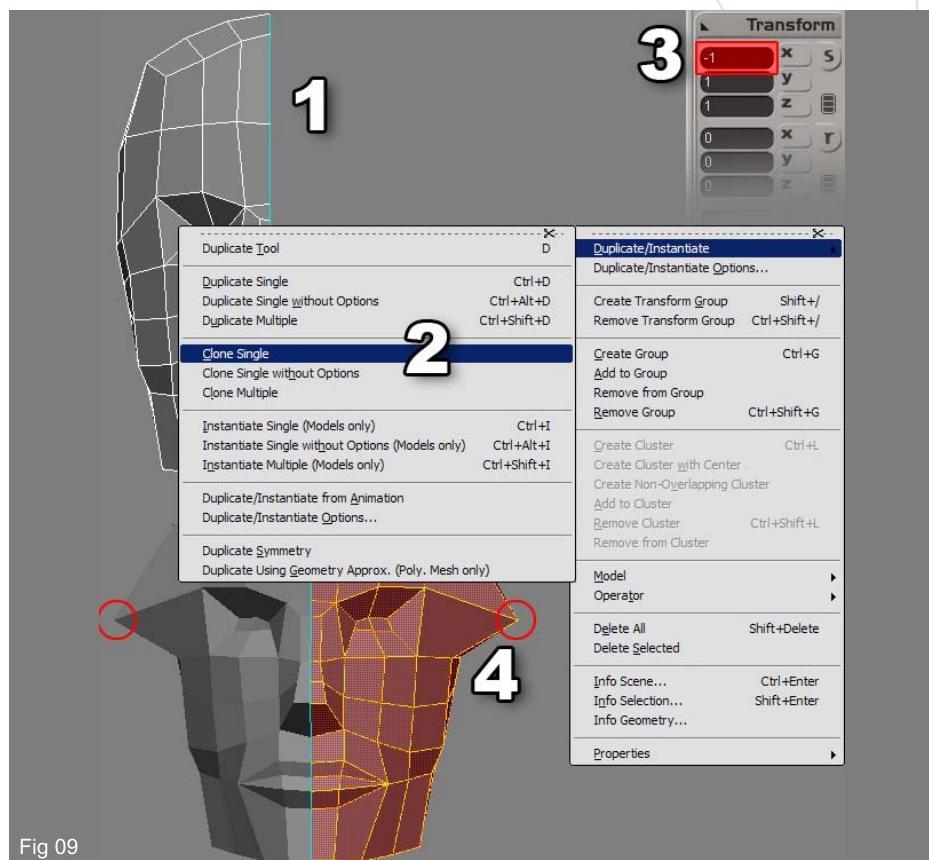
Fig 09

10. We can now concentrate on only one half of the head, seeing the result on the other half in realtime. Use the Add Edge tool to create two more cuts in the eye area, creating two new vertices (marked with red dots in Fig10):
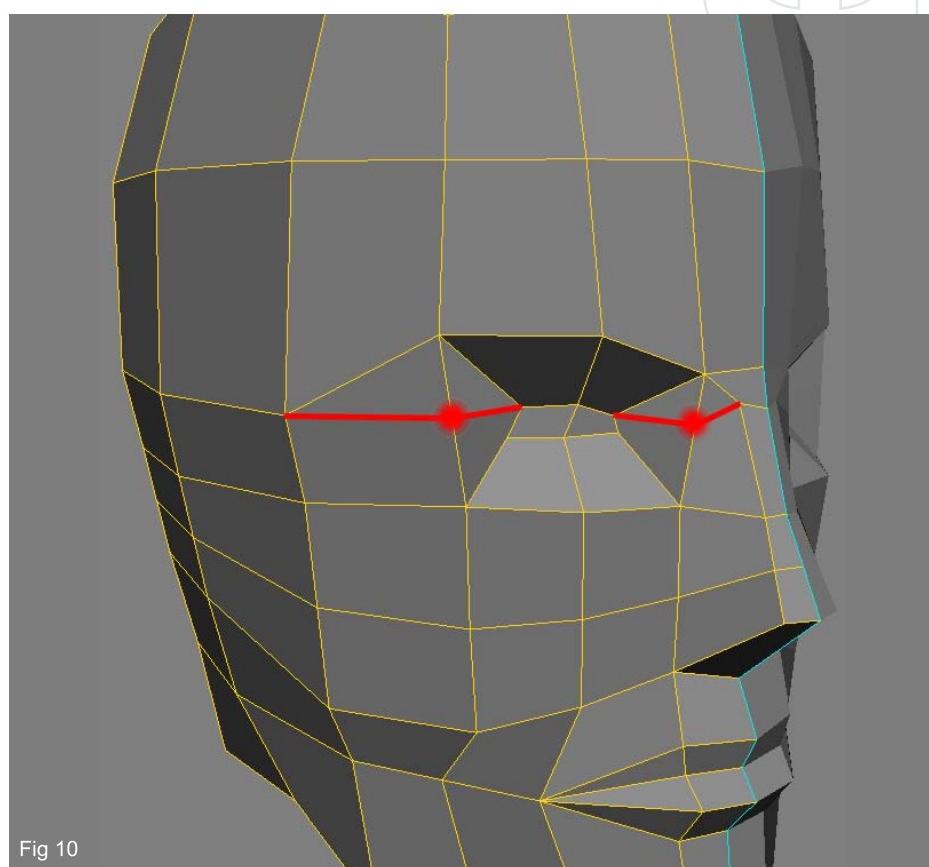

Fig 10
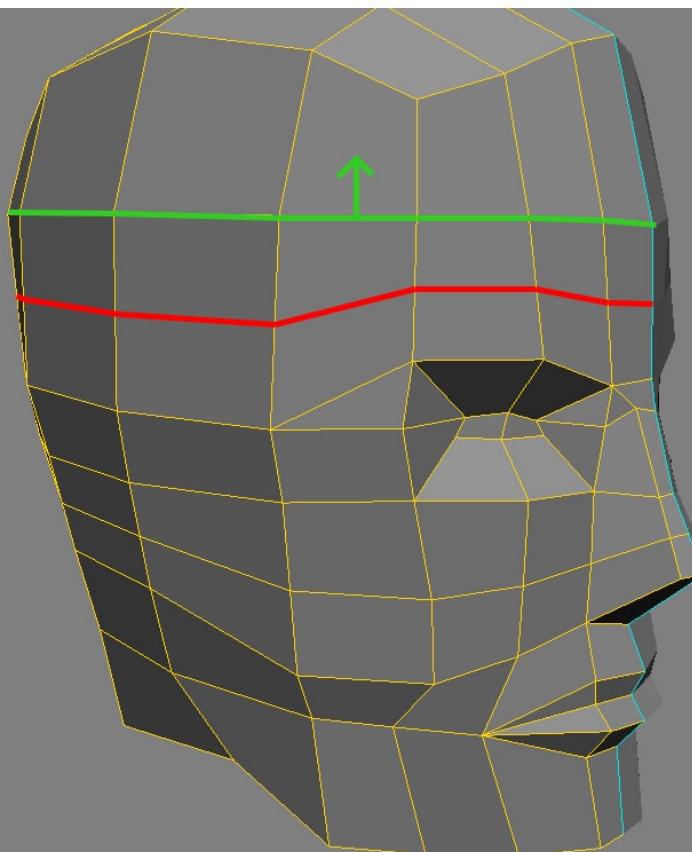
Fig 11

11. Let's add some more detail to the head. select the edgeloop marked in green in Fig11 and move it upwawrds a bit. This is to make room for a new cut that we need to add all around the head (marked in red in Fig11). Select the edge ring and Subdivide it.
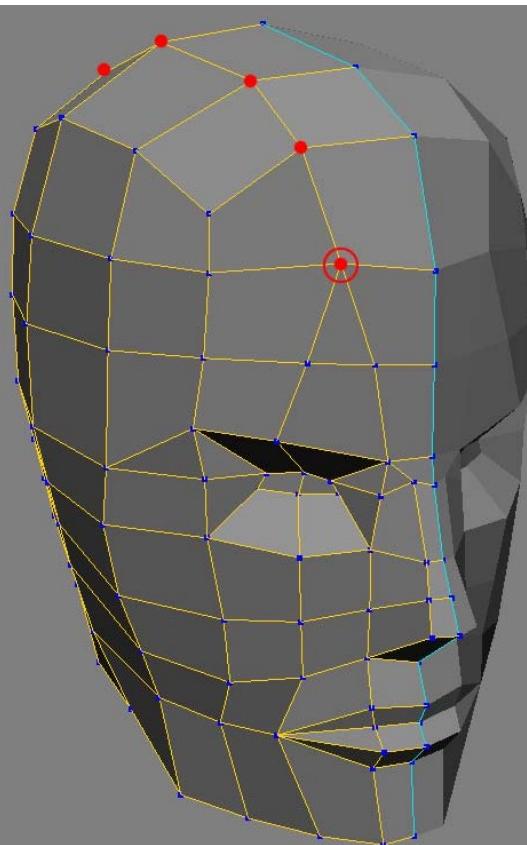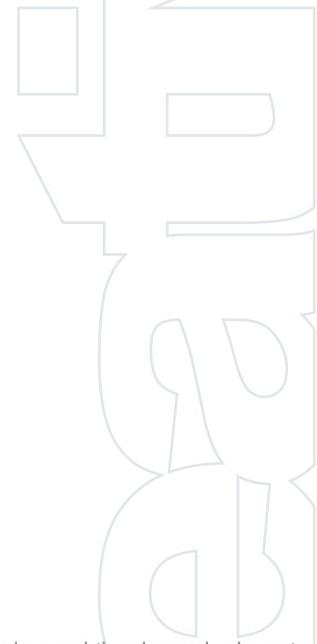

Fig 12

12. Since this is a real-time low-poly character, we have to keep an eye on the number of polygons we use while modeling. All the unnecessary detail (vertices, edges, polygons) should be cleaned up and erased. Use the Weld Points to Target tool to collapse together all the vertices marked in red in Fig12. Go all the way around this edge loop and weld the vertices together. After every Weld operation, check if the head mantains its rounded shape, and if need be move some vertices around to reshape the mesh:

13. Let's improve some other features of the head. Start by Beveling the bottom polygon of the nose (marded in red in Fig13) Note that since we are working on half of the head, some unwanted polygons will be created in the middle of the face by the Bevel operator; just delete them and move the vertices so they match together in the middle. Also, add some more cuts (marked in green in Fig13) in the chin area and reshape the mesh.


Fig 13
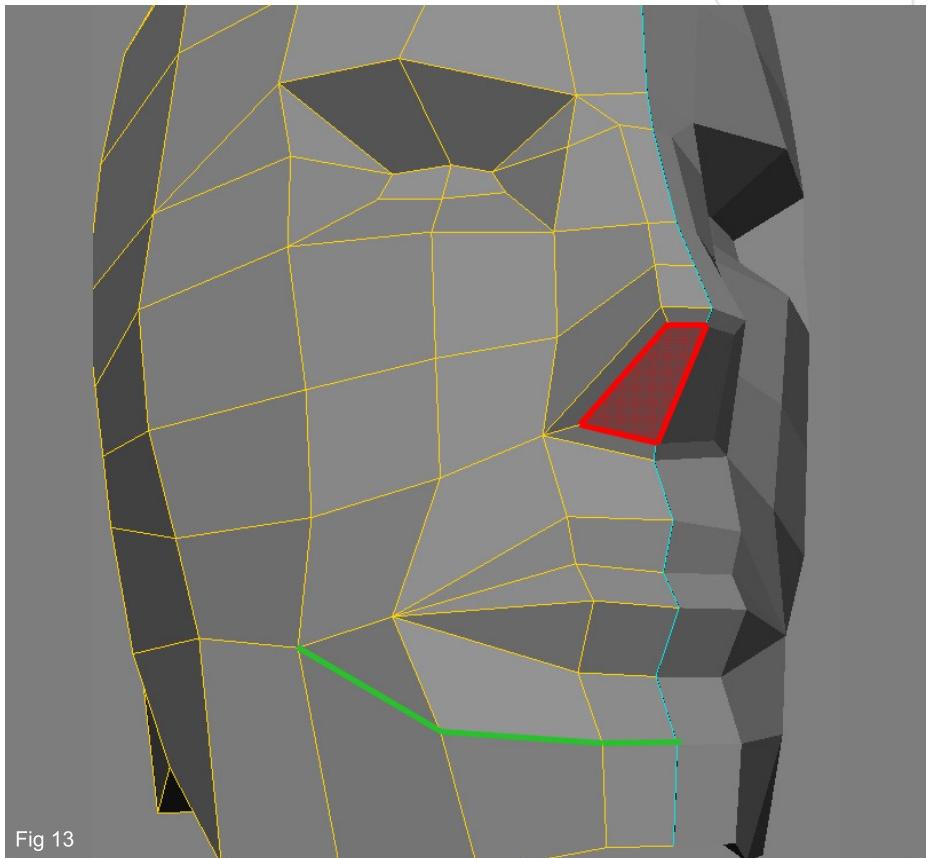
14. Still in the nose area, weld the vertices marked in red in Fig14 to their neighbours, and improve the shape of the nose:


Fig 14
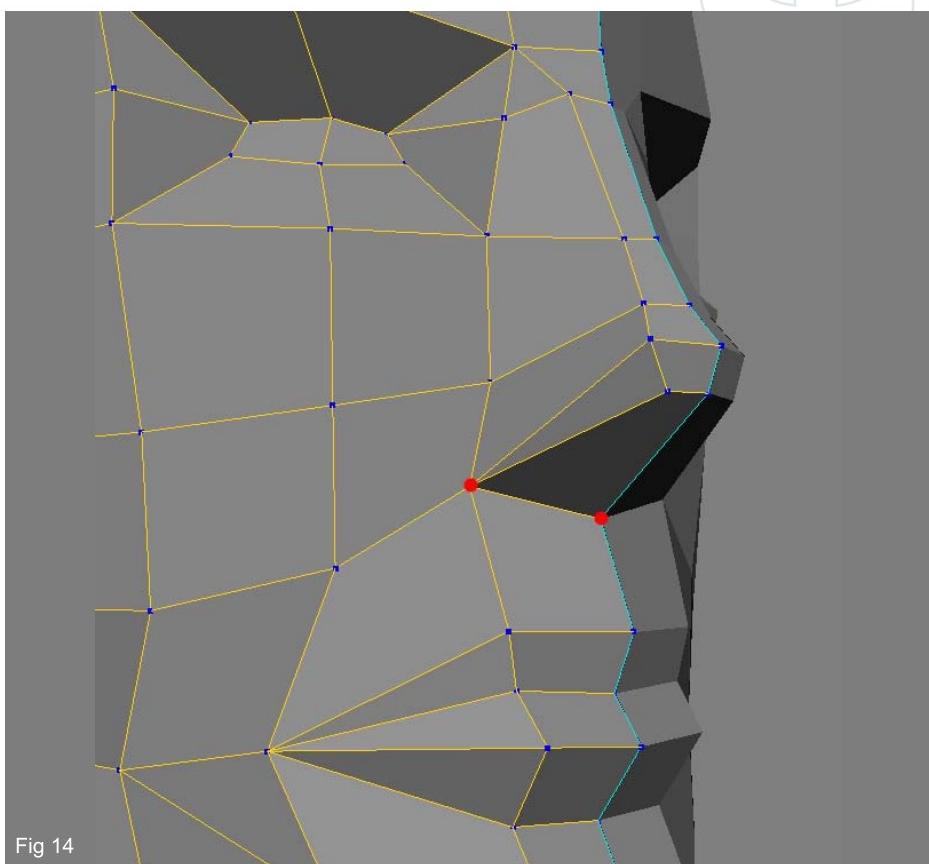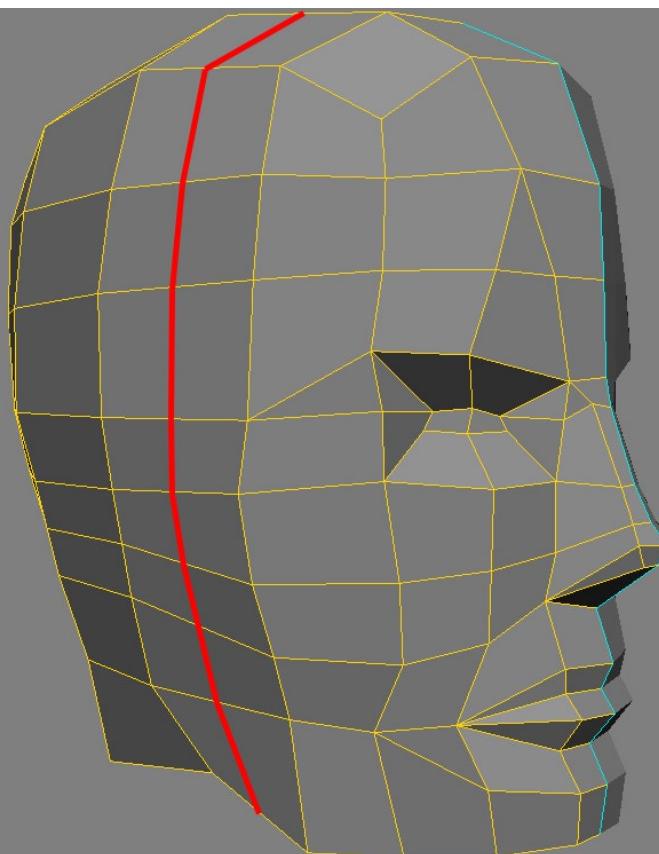
Fig 15

15. Now create a new cut (marked in red in Fig15) Select one edge of the edgering, and use the Shift + D shortcut to Subdivide the whole ring (activate the Parallel Edges option in the Subdivide Edge property page).
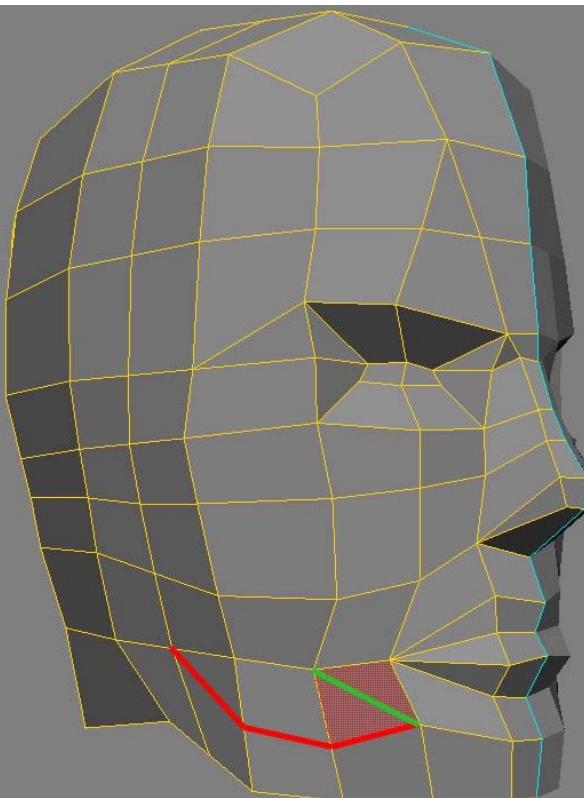

Fig 16

16. Add a new cut to improve the jaw-line, like shown in Fig15 (new edges marked in red). Also, notice that after this new cut we can delete the edge marked in green, ths keeping a quad poly instead of a tri. Select the diagonal edge (green edge in Fig15) and use the Dissolve Components tool to delete it.

17. The bottom chin area is too flat so we need to round it off a bit. Add some other cuts (marked in red in Fig17), remove the useless polygons in the bottom-back part of the head and weld the two vertices in the middle of the chin (marked with the red dot in Fig17). Now that there's more detail, you can give the chin a more rounded shape.


Fig 17
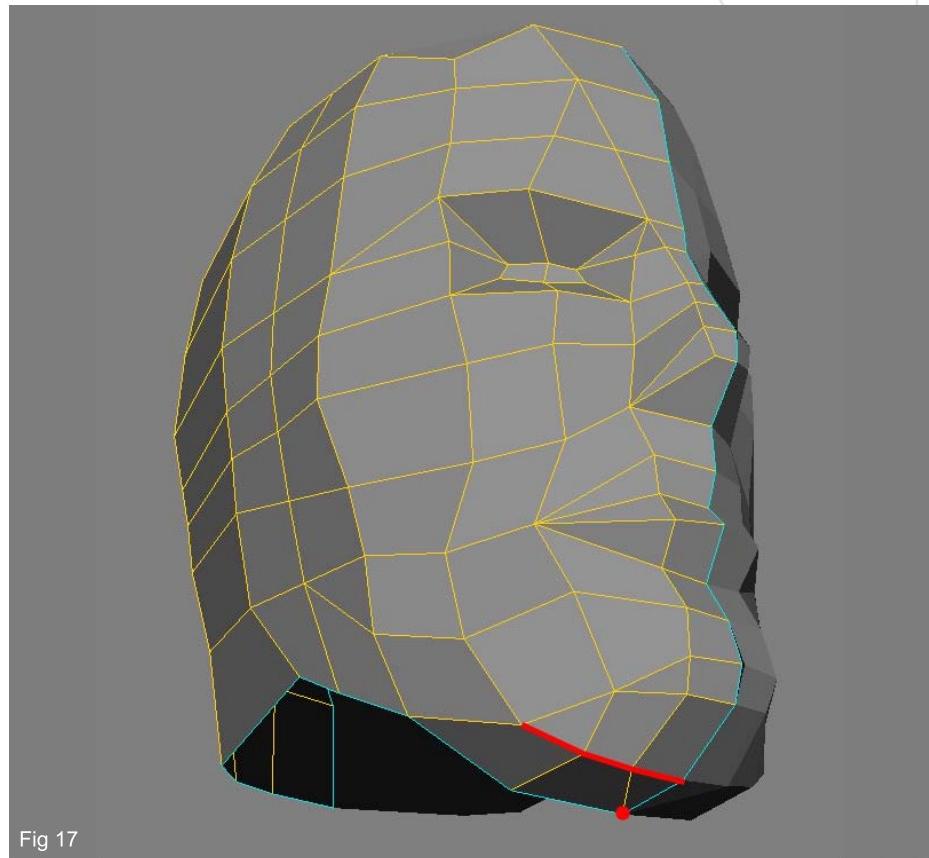
18. We can spare some more polygons in the chin area. Weld the two pairs of vertices marked with red dots in Fig18. After finishing the chin, we can start creating the ear. Move some vertices around to create a rough outline for the ear, as shown in Fig18 (marked with the red contour).


Fig 18
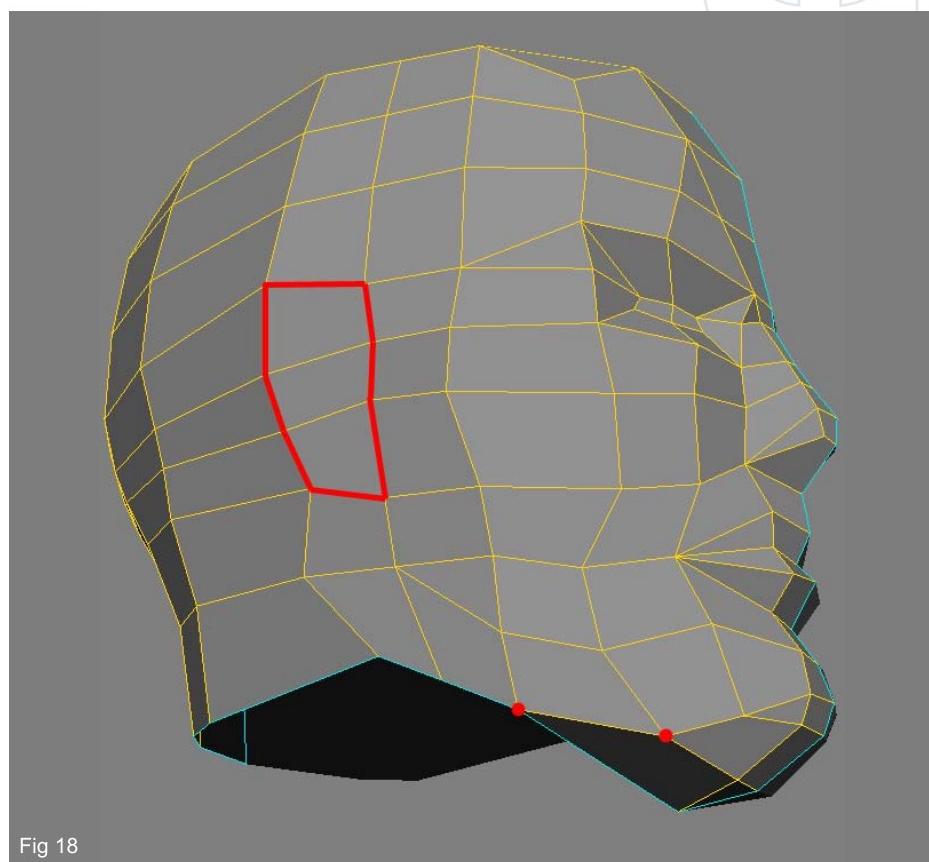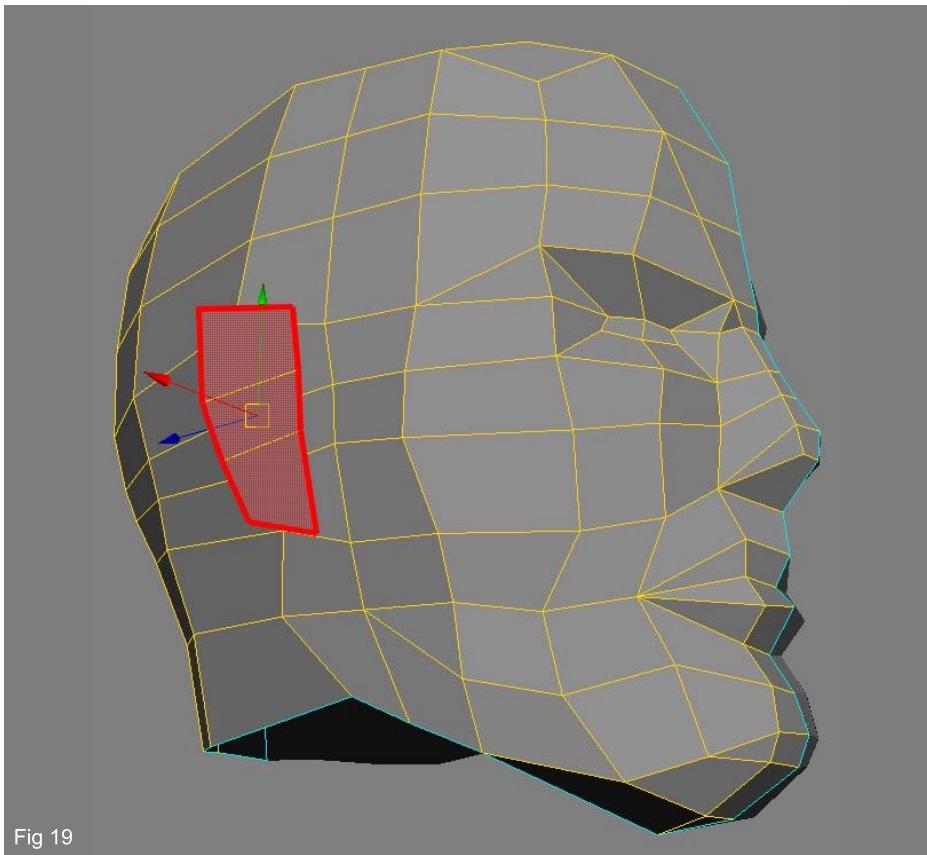
Fig 19

Fig 20

19. Select the polygons that will make up the ear, and use Duplicate Polygons to create a copy of them. In this way, we will mantain the original polygons, but we'll also have a perfect copy which is still part of the head mesh:
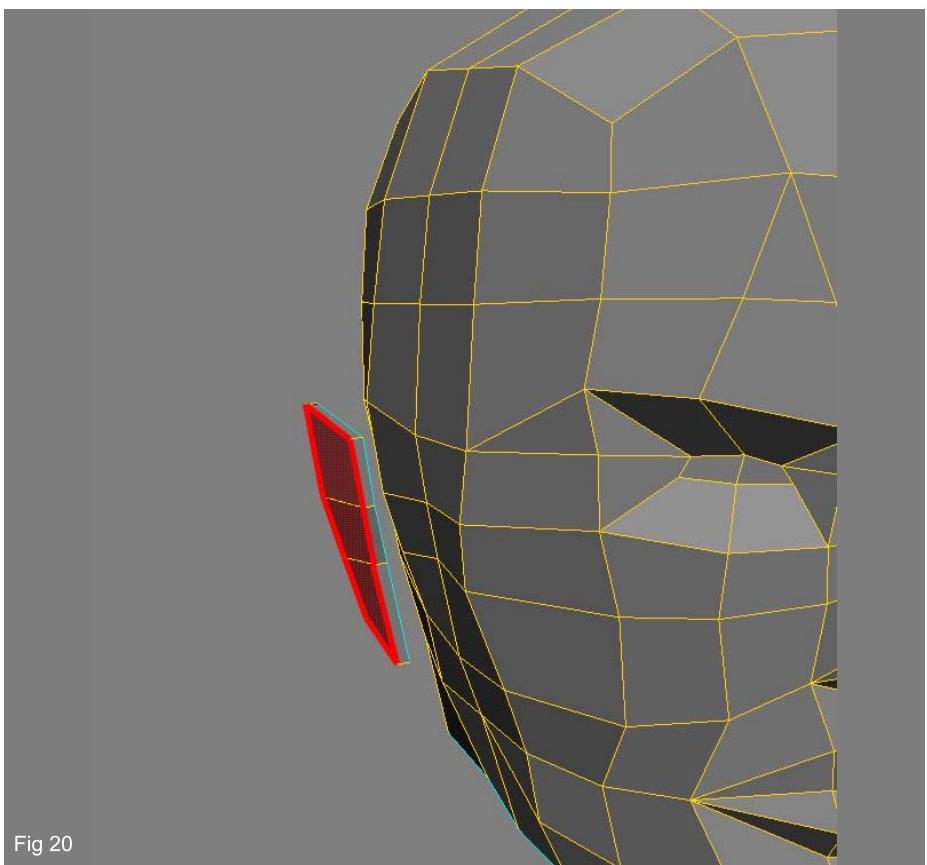
20. With the new polygons still selected, use the Ctrl + D shortcut key to Duplicate/Extrude them. Then move the newly extruded polygons outwards a bit, to give the ear some volume as shown in Fig20.

21. If you look at the inner part of the ear (the one facing the head) you will notice that there is a hole in the mesh (outilne marked in red in Fig21). We need to fix this. Select the contour of the hole, then use the Ctrl + D and Ctrl + Del shortcuts to fill the hole. Finally, select the vertices that were created in the middle of the inner part of the ear, and delete them with Dissolve and Clean Adj. Vertices.


Fig 21
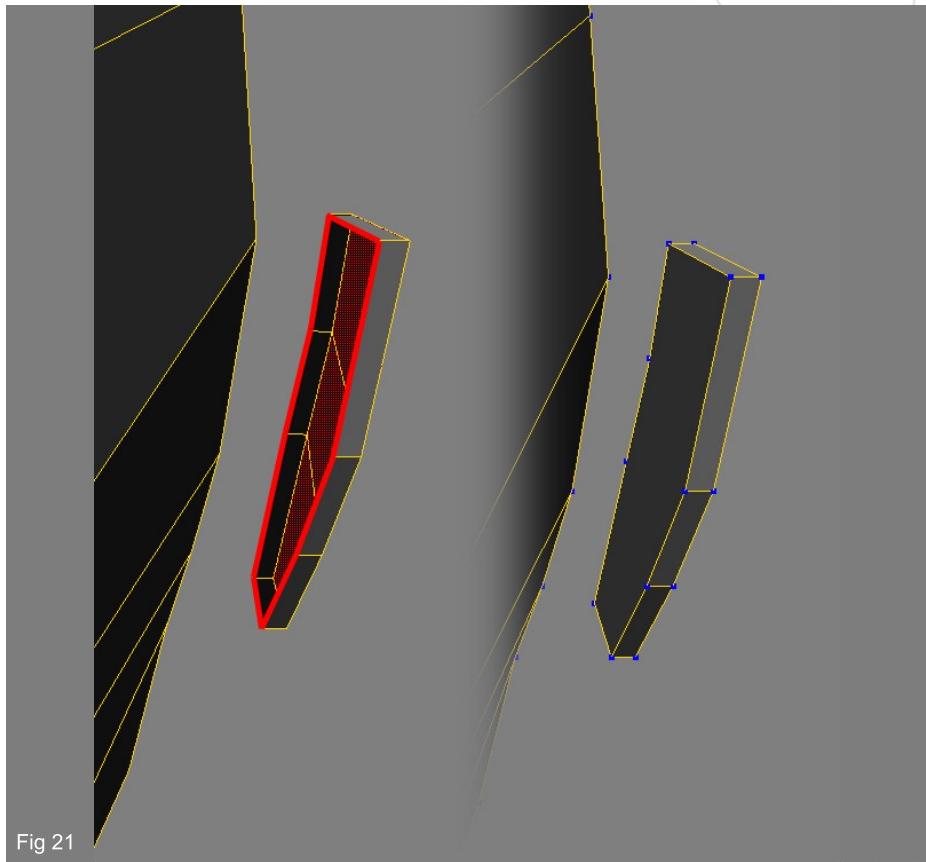
22. We can now put the ear into its correct place, using the Snap features and welding the vertices (marked with red dots in Fig22). We can also add a vertical cut along the ear, so to give it a more round shape.


Fig 22
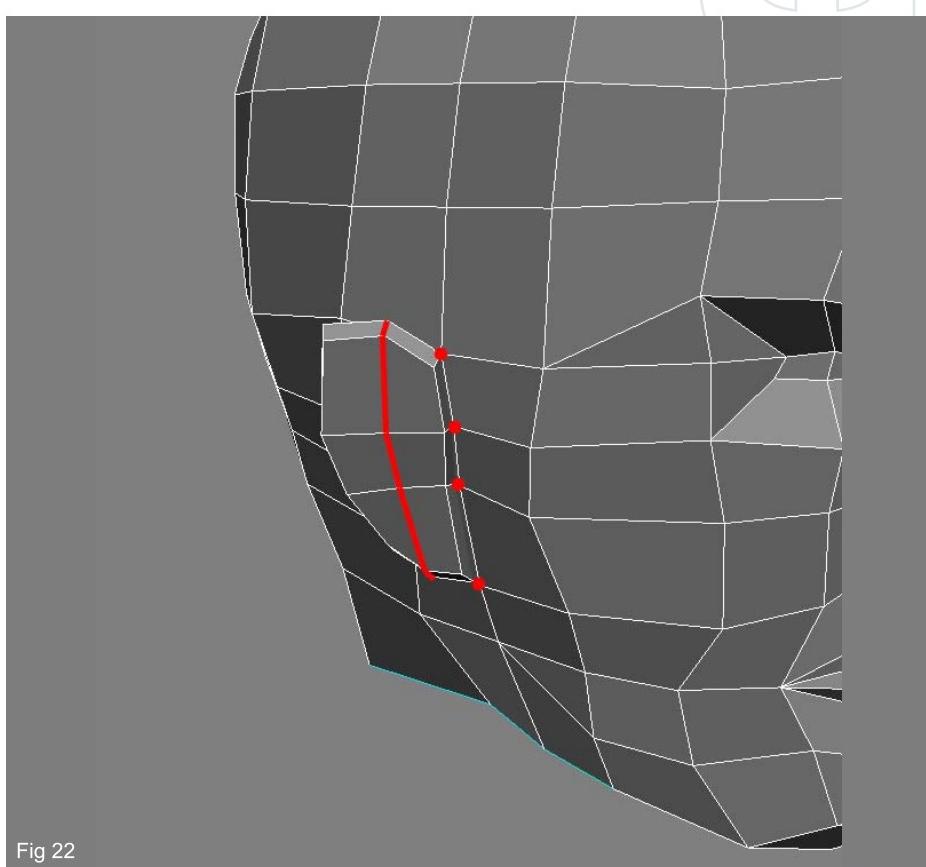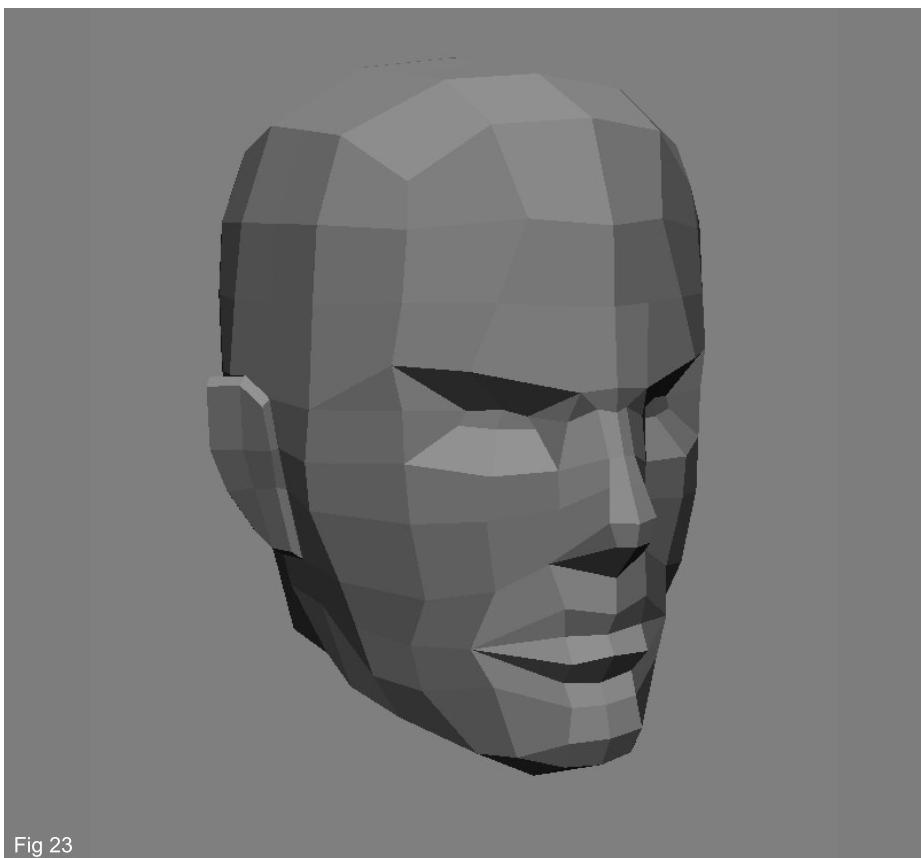
Fig 23

23. Here is our final head mesh. There are some areas that could be improved, moving and welding vertices to spare more polygons, but it's certainly a nice start to work with. You don't need anything else other than the techniques we have seen here to improve the head mesh.
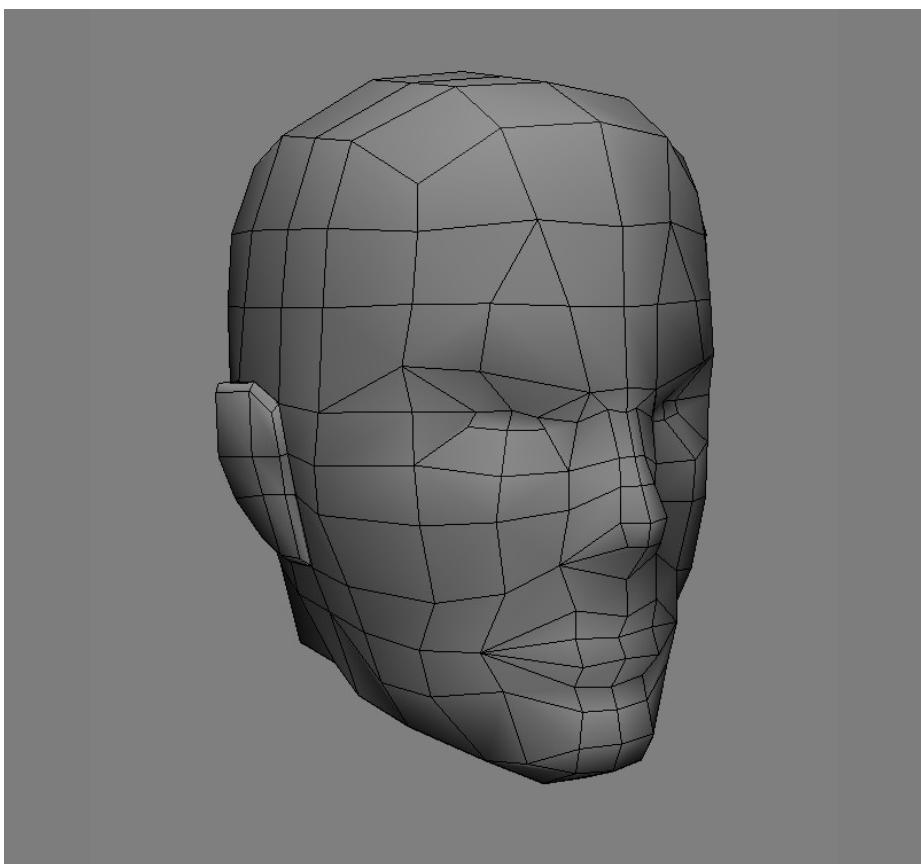

24. Here is a render with the wireframe over it, and some other viewports captures to show the mesh from every side. (next page)

Top

Back
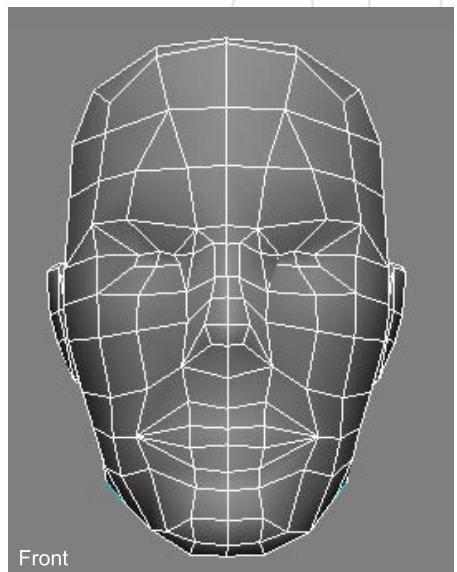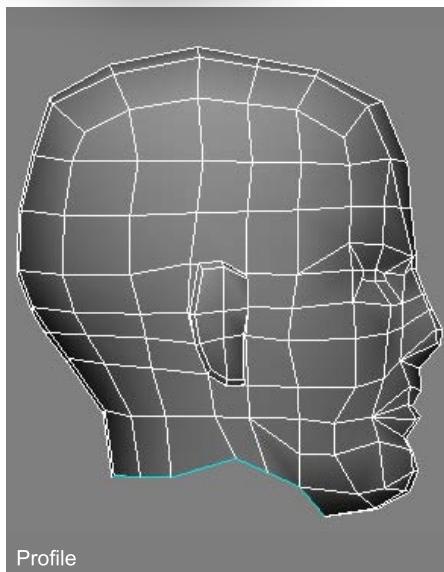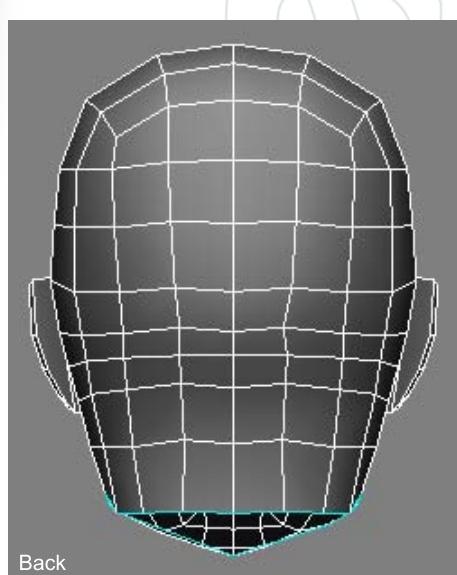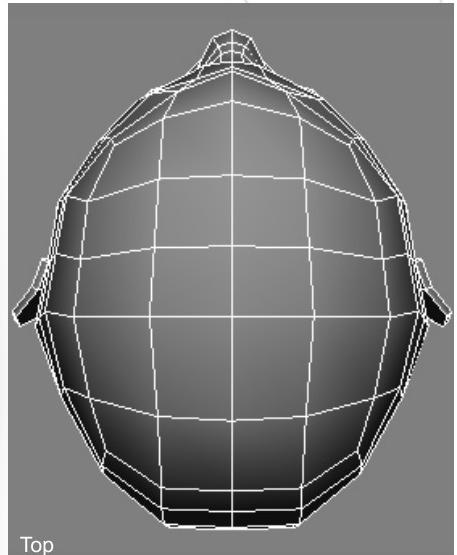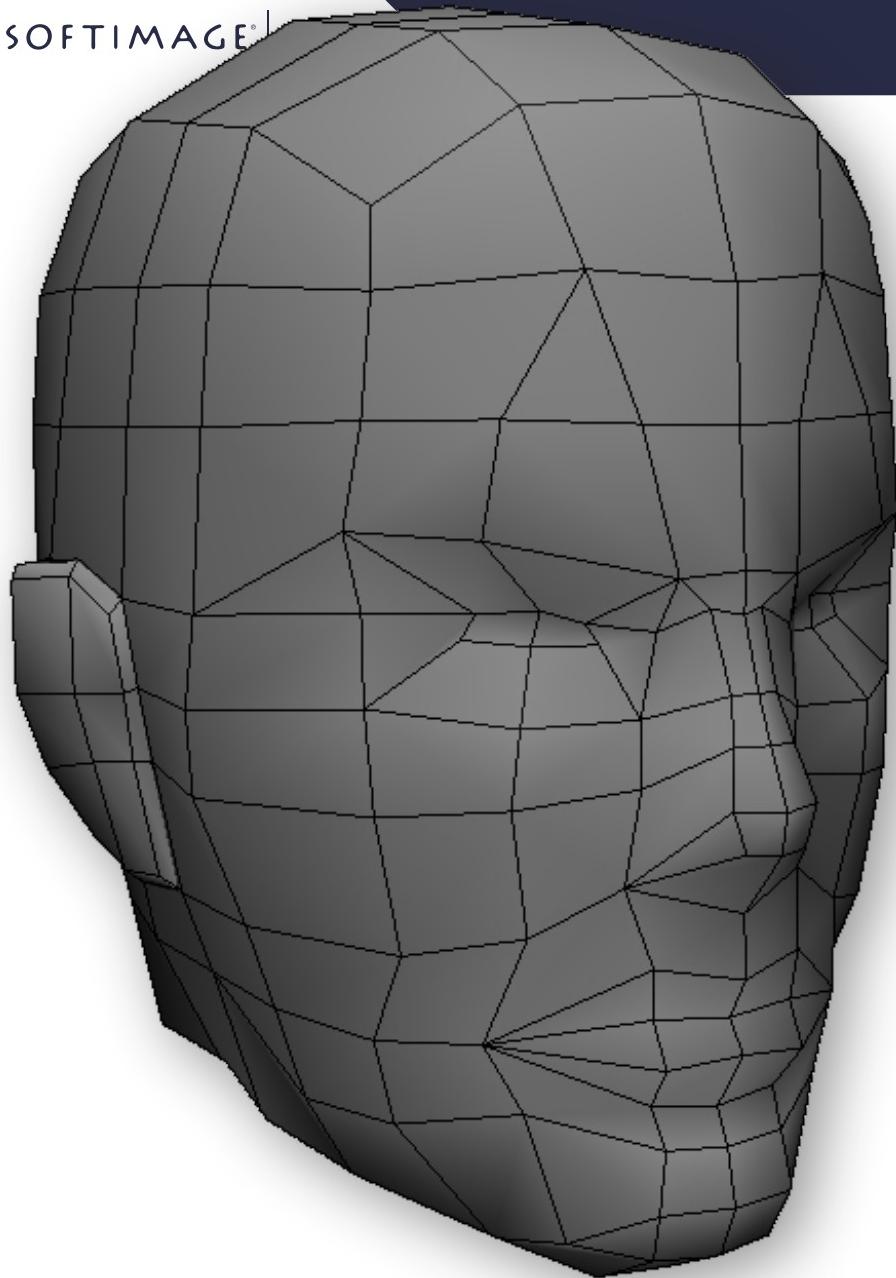
The next month we'll build the torso for this character.

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